THE MEDICAL NEWS.

A WEEKLY JOURNAL OF MEDICAL SCIENCE.

VOL. 87. NEW YORK, SATURDAY, JULY 22, 1905. NO. 4.

ORIGINAL ARTICLES.

CLINICAL FEATURES OF THE BENIGN STENOSES OF THE PYLORUS.[1]

BY HENRY L. ELSNER, M.D.,

OF SYRACUSE, N. Y.

THE consideration of the Clinical Features of the Benign Stenoses of the Pylorus with their medical treatment, the subject which your presiding officer has invited me to consider in this symposium, would indeed seem to be hackneyed and threadbare were it not for its growing importance from a therapeutic standpoint. It may be said that we are passing through a transition period so far as the treatment of these conditions is concerned. Interesting experiences with individual cases, often unique, with the association of surprising pathologic finds which have finally cleared the horizon, still further justify the discussion which you have arranged for this meeting. The writer, in accepting your invitation, assures you that he fully appreciates the included privilege and honor. He will consider in his treatment of the subject those abnormalities, benign in character, within or without the stomach, which block its outlet sufficiently to interfere in any degree with the emptying of that organ or otherwise disturb its functions.

The benign stenoses of the stomach may be either (1) *functional*, or (2) *organic*. The latter may be either (*a*) congenital, (*b*) acquired. The acquired stenoses may be either intrapyloric or extrapyloric.

1. The *functional stenoses* are likely to be transitory, the patients highly neurotic. We have occasionally assumed the presence of *pyloric spasm* in cases where gastrectasia had persisted for months without producing symptoms, in which there followed periods during which the stomach became intolerant; there was peristaltic unrest with hyperacidity. In some the symptoms were aggravated by mental distress or other causes, including mainly those which ungeared the nervous system. Neurasthenia was always in the ascendency. In none of these cases did the evidences of stenosis become permanent, in none was there reason to suspect grave pathologic conditions.

There are also cases of *intermittent hyperchlorhydria without ulcer*, in which we assume the presence of pyloric spasm recurring at intervals of several weeks or months. There are severe pains, intolerant stomach, nausea, vomiting of large quantities of hyperacid fluid, severe headaches and often cerebral symptoms. With the epigastric pain, which may become severe, there is eructation of gas, visible peristalsis, constipation, a great thirst, complete anorexia. The total acidity is abnormally high so long as the symptoms persist, due to the presence of HCl. Young adults are most likely to develop these symptoms, and errors of diet, excessive use of sweets and mental emotion are leading factors. The chemical examination of the stomach contents differentiates these cases of probable spasm of the pylorus from ordinary migraine and gastric catarrh.

Occasionally we find a case of *acute dilatation* of the stomach with alarming symptoms, collapse without previous history of stenosis or other stomach disorder sufficient to direct attention to that organ. Some writers have reported deaths during such acute dilatation. Whether these cases are to be classified under pyloric spasm, as was suggested by Pepper and Stengel, has never been definitely decided. Robson and Moynihan speak of neuroparesis in connection with such serious, suddenly arising conditions. A few of these cases are recorded, promptly following operations in which it may be assumed that adhesions or other complications were more likely to have been the pathogenic factors than spasm or so-called neuroparesis. Two cases of acute dilatation seen by the writer seemed, in spite of the fact that there was no proof to justify the strong suspicion, due to overpowering toxemia. The true pathology of these serious and sometimes fatal cases can be decided only by the anatomic study of the individual case, when in all probability we shall find more than functional disorder.

Pyloric spasm may safely be considered secondary in the majority of cases and its presence must always lead to a strong suspicion of associated organic disease. On several occasions patients beyond middle life have been seen in consultation with symptoms of such spasm recurring at varying intervals, at times there was normal but gradually reducing HCl. production; in other cases the free HCl. was slightly reduced; in all of these lactic acid was absent. The end proved that we were dealing, at the time of the supposed spasm, with incipient malignancy. The urgent need of repeated chemical tests and physical examination at short intervals without undue haste to reach conclusions, must be emphasized in these cases.

The question has often arisen in my mind whether pyloric spasm is not occasionally present in neurotic girls, particularly during the menstrual period, with intolerant stomachs, marked and painful cramping of the organ, visible and persistent peristalsis. It is only exceptional that these hysterical girls have failed to vomit. The pain with peristalsis has persisted,

[1] Read before the American Gastro-Enterological Association, in New York, April 24 and 25, 1905.

yielding finally, not to alkalies but to appreciable doses of belladonna. The associated dilatation of the stomach has not persisted beyond the acute period.

It will be wise to hesitate long before diagnosticating a primary pyloric spasm in the adult, for it will be necessary to exclude organic disease by a thorough consideration of the separate functions of the stomach and the final elimination of mechanical organic obstruction at the pylorus.

Let us leave this part of our subject with the positive assurance that as we become more scientific we are the more thoroughly convinced of the rarity of functional disease and that, in considering the clinical features of pyloric stenosis, supposed to be dependent upon transitory nervous influences, we assume a mental attitude in which there is a fixed determination to accept such diagnosis, only after the greatest possible justified resistance.

2. *Organic Stenosis.*—A. *Congenital stenosis* of the pylorus may be of moderate degree, in which patients live for years with more or less continuous symptoms, a second class of cases in which the symptoms during the first year or two of life are sufficient to justify a suspicion of marked pyloric stenosis, in which, however, nature comes to the rescue, occasionally supplying such infants with almost normal functionating stomachs during life, and finally that serious class of cases in which symptoms are likely to follow birth, as a rule before the fourteenth day of life, never postponed beyond the ninth week (and this only rarely) in which death follows before the fourth month unless these infants are relieved by surgical interference.

It is not within my province at this time to consider the theories of the production of these stenoses known as spastogenic and hypertrophic, nor the Freund hypothesis which practically includes both spasm and hypertrophy as the cause of these. The writer recalls cases of congenital stenosis of moderate degree, in which all symptoms justified the diagnosis, which have yielded to proper treatment. Compensatory hypertrophy sufficient to overcome moderate mechanical obstruction must have followed. These cases include the child of a colleague in my own city with symptoms beginning at birth in which the child during the first two years of his life presented all of the symptoms of congenital stenosis, in which the boy, to-day twelve years old, is to all appearances perfectly well. In speaking to the father of the child while writing this paper, I was reminded of the fact that when the boy was one year old he weighed less than he did at birth, that his stomach was at that time still monstrously dilated, holding stagnant food, and that there was persistent peristaltic unrest.

The symptoms in all cases of congenital stenosis must follow birth immediately or cannot be long postponed. In four cases seen by the writer, three confirmed by post mortem, vomiting and other symptoms of indigestion first showed themselves, in the first before the end of the second day, in the second and third during the second week and in the fourth during the fourth week. In all of these cases there was marked visible peristalsis. It was by no means easy to detect the abnormally resistant pylorus; in all, the stomachs were greatly dilated, constipation and vomiting were constantly present.

Persistent vomiting in children, beginning after the ninth or tenth week of life, is not due to congenital narrowing of the pylorus. The majority of children with the congenital defect die before the end of the third or fourth month. Persistent vomiting in babes which begins shortly after birth is not as a rule to be interpreted as dependent upon congenital stenosis. Such conclusions would lead to great harm. Forcible projectile vomiting is quite characteristic of stenosis. The food seems to be held, only that it may be thrown far from the mouth and this suddenly, as a rule without warning. This is as true of breast-fed children as of those artificially and properly nourished. *No possible modification of the food relieves the symptoms where the stenosis is of high degree.* Single feedings may be held for a time and vomited with a second or third nursing. Couple these characteristics with marked visible peristalsis, even without palpable thickening, occasionally a high-pitched percussion note corresponding with the location of the pylorus, the physical signs of stomach dilatation, and the diagnosis becomes reasonably certain. Rapid wasting with many of the other symptoms found in the adult, as a rule ends the scene. *Congenital incomplete stenoses of the pylorus are frequently the cause of chronic disturbances,* as already mentioned, *which continue throughout life,* including marked and persistent gastrectasia, motor insufficiency, anomalies of secretion, symptoms of Leube's "nervous dyspepsia," including marked neurasthenia. These cases present a continuous train of symptoms with periods of marked exacerbation. While writing this paper such a case was sent to me in which a man forty-three years of age had never been without symptoms of stenosis and gastrectasia. The stomach is never free from stagnant food. His attendants have never failed to speak of his monstrous and persistent dilatation of the stomach, the palpable pylorus has been a surprise to all. This case is associated with hypersecretion and hyperacidity, peristaltic unrest, an enormously dilated, horseshoe shaped stomach. There is no history of ulcer. In spite of the relief of subjective symptoms by well-regulated treatment, the physical signs persist. Final gastric fibrosis, as described by Hanot and other French and German observers or the hypertrophic pylorus of Cruveilhier and Andral are sequelæ which materially influence the size and position of the organ as well as its functions in cases with almost parallel histories.

B. *Acquired Stenosis.—Intra-pyloric.* (1)

Cicatricial stenosis (*chronic*). The majority of benign stenoses are unquestionably due to ulcerative processes invading the pylorus. It is not always easy to get a clear history of preceding ulcer. That occasionally ulcers have existed without giving rise to symptoms there can be no doubt. As a rule, however, the previous history is direct, and close questioning with a thorough consideration of all that the case presents, proves the likelihood of previous destructive disease which justifies the reference of stenotic symptoms to consecutive cicatricial changes. If all cases of ulcer were associated with hemorrhage, chronic cicatricial stenosis due to this condition might be readily explained, for there is no symptom which the average patient remembers longer than hemorrhage, particularly when such alarming symptom is associated with severe pain. In these cases we are not limited to subjective symptoms alone or to the consideration of the previous history which may be vague and misleading. The physical examination of the patient, the absence of a large mass, the presence of dilatation, the revelations made positive by the stomach tube and an examination of the stomach contents, will be likely to clear the diagnosis. In those cases of chronic cicatricial stenoses which follow corrosive poisoning, localized phlegmonous inflammations and other chronic destructive changes, the previous history with a consideration of the clinical features and the absence of a large palpable mass will aid materially in confirming the diagnosis.

The writer feels justified in making the positive statement that in rare cases (and he has met with two of these in practice), there may be cicatricial stenosis of the pylorus following ulcer which has not undergone cancerous degeneration in which cancer nodules have been present in other organs of the body. The last case of this kind which came to his notice was that of a woman who had carcinoma of the uterus and liver with a benign cicatricial stricture of the pylorus. The persistent dilatation and evidences of benign stenosis covered a period of many years, following all of the classical symptoms of ulcer of the stomach.

(2) *Fibrotic stenosis.* (*a*) *General* and (*b*) *localized.* (*a*) *General gastric fibrosis* described by Brinton and Hanot may lead to far-reaching change in the mucous and submucous coats of the stomach, invading the pylorus as the process advances, causing a marked contraction and thickening of the entire organ with almost complete closure of the stomach outlet. In some of these cases the mucosa is so involved as to give many of the symptoms of atrophic gastritis with marked anemia, consecutive change in the secretory, motor and absorptive functions of the stomach. The organ is small, may present as a globular tumor, holds but little fluid. The use of the stomach tube gives valuable information. In some of these cases it is impossible, because of the thickened stomach wall, to inflate the organ. The differentiation of these cases presents great difficulty. They often resemble infiltrating cancer of the stomach.

(*b*) *Localized fibrous thickening of the pylorus,* likely to be annular, is occasionally found following previous conditions which may have given rise to but few symptoms and which were not dependent upon preceding ulcer. In these cases the ring-shaped constriction causes consecutive dilatation with its attending symptoms. It is not easy to palpate this small thickening of the pylorus in the majority of cases.

(3) *Hypertrophic stenosis, as described by* Cruveilhier and recently considered in detail by Boas, occasionally presents for diagnosis and treatment. We have seen this condition only at rare intervals, and where suspected we have not always felt that the diagnosis was correct. These cases are supposed to follow chronic gastritis with ultimate dilatation, in which the muscular and submucous tissue as well as the mucosa are finally sufficiently changed to give rise to constriction of the pylorus.

(4) *Stenosis dependent upon ulcer.*—Ulcer at or near the pylorus and in the first part of the duodenum with associated spasm, marked swelling which may be acute or due to secondary inflammation is unquestionably an occasional cause of pyloric stenosis. The pain is likely to be most severe as the food is ready to leave the stomach. An examination of the stomach contents materially aids in reaching satisfactory conclusions. In these cases the pain is out of all proportion to other complaints, there may be hemorrhage, with many other symptoms, subjective and objective of ulcer.

(5) *Acute inflammatory stenosis associated with infection, deep-seated gastritis and acute poisoning,* presents a train of symptoms coincident with these acute conditions, yielding as the associated inflammation subsides unless the changes are sufficiently deep to give rise to permanent lesions.

(6) *Syphilitic stenosis,* as described by D'Ursi and mentioned by others who have written on specific stomach diseases, is occasionally found with clinical features which do not permit of differentiation from other forms of cicatricial or inflammatory stenosis, save as we get authentic histories and, better still, results from antisyphilitic treatment.

(7) *Tuberculous stenosis* is occasionally associated with far-reaching disease of the stomach. Individual clinical experiences with this complication will always remain limited.

(8) *Stenosis dependent upon non-malignant growths,* fibromyoma, adenoma and polyp, described by Bouveret, Cornil and Chiari, only rarely found, may prove puzzling; the diagnosis can be made during life only after exploratory operation.

(9) *Stenosis due to distortion or traction,* giving rise to acute pyloric obstruction (Kussmaul, Albrecht and Riegel) dragging at a point in the

horizontal part of the duodenum by the weight of the stomach contents where the former merges into the vertical duodenum, firmly fixed against the spine, is relieved at once by emptying the stomach with the tube or by free vomiting. This condition is occasionally responsible in all probability for acute and alarming dilatation.

Extrapyloric Stenosis.—It is difficult to divine all of the unusual and unexpected conditions which may lead to extrapyloric organic stenosis. We never cease to wonder at these pathologic possibilities. Clinical and pathological experiences in this field are rarely repeated. Perigastritis, gall-stone disease, adhesions to neighboring organs, particularly to the liver and gall-bladder, distortions due to innumerable anomalies and pathologic changes invading the organs already mentioned, the pancreas and kidney, may produce narrowing of the pylorus, consecutive dilatations and all of the symptoms of pyloric stenosis. In a paper written a number of years ago on the "Vagaries of Gallstones," the writer reported a case in which monstrous gall-stone masses with associated adhesions caused all of the symptoms of pyloric construction during an entire year. At the end of this time the hard tumor disappeared, for a few days symptoms of complete intestinal obstruction followed, preparation was made for operation, when nature came to the rescue. Gallstones resembling cobbles in size were passed by the rectum and the patient, a woman advanced in life, made a perfect recovery and is still living, without a return of symptoms.

In the majority of cases, extrapyloric stenoses are recognized, though the pathological condition giving rise to these may not be determined. Perigastritis, peritonitis, perihepatitis, pressure due to pancreas tumors, large kidney masses and matting together of organs may be suspected as causes of extrapyloric stenosis.

In our study of the cases under consideration we must (1) give data which prove the presence of pyloric stricture, and (2) its benign nature must be established.

1. It is rational to suspect stenosis of the pylorus, whenever it is possible to demonstrate marked dilatation of the stomach with perceptible lowering of the greater and lesser curvature, recurring peristalsis from left to right (peristaltic unrest), which may or may not be painful, and may be and frequently is associated with ballooning of the organ; with either a palpable mass or thickening at the pylorus, more or less splashing and evidences still further of motor insufficiency, the latter made positive by means of the stomach tube, and such other refinements of diagnosis as are now used by all who study these cases closely which prove beyond peradventure the stagnation of food. *The fasting stomach found distended and containing food remnants must always arouse suspicion.* Stomachs may be abnormally large yet true ectasia with motor insufficiency may be absent. Megalogastria does not mean motor insufficiency or the inability of the stomach to perform its functions with fair satisfaction. Mechanical obstruction implies motor insufficiency sooner or later and this means inability of the stomach to empty itself with all attending subjective and objective symptoms. Stenosis present, the dilatation which is secondary remains, it is a permanent deformity. A stomach which is able to empty itself, but for some reason becomes dilated (true primary dilatation), does not remain permanently dilated as a rule. It is irrational to conclude that all enlarged stomachs are insufficient and that their pylori are stenosed. This physical condition must be associated with a knowledge of disturbed function before accurate conclusions are justified. Pyloric stenosis creates a decided disproportion between the stomach's task and its ability to perform. "Wo Arbeitslast und Arbeitskraft (as Riegel so prettily expresses it), einander nicht mehr, wie in der Norm, das Gleichgewicht haben." This fact explains all of the conditions consecutive upon mechanical obstruction at the stomach outlet. Alkaline contents are as a rule hurried through the stomach and, contrary to general belief, far-reaching change as in achylia gastrica shows no tendency to gastrectasia. We must always be suspicious, where there is motor disturbance with hypersecretion and hyperacidity, of existing stenosis. In these cases it may often be difficult to decide, in spite of evidences of stenosis and dilatation, whether the former is the cause of the hypersecretion. Not all benign stenoses are associated with hypersecretion.

One of the leading symptoms of stenosis is vomiting. Frequency and quantity of vomited matter vary in accordance with the size of the stomach and the degree of constriction. In advanced cases the quantity of vomited matter is as a rule greater than the quantity of food and liquid taken. The vomited matter with obstruction, shows the presence of food long since taken. Vomiting relieves these patients, a load has been removed, it is wonderful to see how encouraged they are, while this enormous pocket is filling only to empty itself again. The reaction of the fluid vomited, its appearance, odor and color depend entirely upon the nature of the underlying disease. Associated with this vomiting at intervals, which may indeed be considered the leading symptom of stenosis, is marked change in appetite, sometimes perverted, fickle or completely lost. Intolerable thirst with symptoms of stenosis, in spite of the fact that the stomach is receiving fresh water for its relief, is always suggestive that this is of high degree. In these cases there is monstrous gastrectasia.

As the secondary changes follow, the tongue becomes glazed, often dry, coated at times, or remains unchanged. Constipation is the rule. The general appearance of the patient suffers, malnutrition, malassimilation are soon shown with all the other ear marks of the disease.

Peristaltic unrest, recognized if the abdomen is sufficiently watched, even during the early stage of the disease, becomes a symptom of great value. Peristaltic unrest may continue with marked stenosis until the patient is far advanced in the disease, when the musculature of the stomach wall becomes so feeble as to refuse longer to make the effort to empty itself, or when, with degeneration and infiltrating disease, it finally ceases. Often, in cases of stenosis, peristalsis is materially increased or aggravated during the early stages by the administration of soda and tartaric acid as carbonic acid is released. Splashing is usually present; to be of value it must be associated with other symptoms and we must make sure that it is due to retained stomach contents. As a rule these patients are able to produce the characteristic sounds without the assistance of the physician. Physical examination of the stomach including usual methods, often gives valuable data and must be practiced to confirm subjective symptoms.

The stomach tube as a diagnostic agent is indispensable. It is necessary in order to gauge the degree of obstruction and the amount of insufficiency to know the length of time food is held in the stomach. In none of these cases are we to neglect the inflation of the stomach, either through the tube or by carbonic acid liberated by the administration of a sufficient quantity of sodium bicarbonate and tartaric acid. Simple as is this maneuver we may occasionally misinterpret the result. I recall a case in which inflation filled the abdomen with what was considered a dilated stomach, in which the colon was distended through a gastrocolic fistula. The case proved to be one of infiltrating malignant disease of the stomach communicating with the colon as a result of ulceration and adhesive localized peritonitis.

The urine presents changes which cannot be ignored. Its quantity is reduced, it is concentrated, likely to be alkaline and contain indican.

Tetany is a symptom of very great value in the diagnosis of gastrectasia dependent upon any of the causes enumerated. In spite of all that has been written on this subject the characteristic cramping and other alarming conditions in the majority of cases, this symptom is not always correctly interpreted and the average physician, because of its comparative infrequency, fails to appreciate its significance. I make this positive statement because of the very painful experiences which I have had in consultation practice. Symptoms referable to the nervous system, particularly neurasthenia, are frequent and predominate in cases of benign stenosis.

The heart, as the disease advances, may become ungeared, may partake of the general neurotic condition of the patient or may simply show increasing weakness with advancing disease. The presence of tumor positively connected with the pylorus or duodenum and symptoms of gastrectasia gives positive information.

If there is no tumor it may be difficult to decide between primary and secondary dilatation. In both conditions the subjective symptoms may be the same. In both we have seen peristaltic unrest and even bile in abundance mixed with the stomach contents with marked organic obstruction. In many of these cases, where repeated examinations of the stomach contents and close observation of physical signs have failed, we have applied the therapeutic test for purposes of diagnosis. We need not hesitate to subscribe to the statement of Mintz, Bouveret and Bevic that this often furnishes the only positive diagnostic means. Regulated diet, lavage of the stomach, alkalies in proper doses to meet underlying hyperacidity will, in primary dilatation be followed by material improvement, long periods of relief and partial return of motor sufficiency, as is shown by the tube and other tests. The alkalies probably relieve associated spasm. Such improvement with even temporary disappearance of symptoms we have never noted with true organic stricture of the pylorus, whether benign or malignant. It must be remembered that the quantity of retained ingesta and secretions are less in primary than in secondary dilatation, also that primary dilatation may recur with renewal of original symptoms. The presence of bile in large quantities with evidences of constriction would indicate its location below the papilla in the duodenum. The neurasthenic element is much greater in cases of primary than of secondary motor insufficiency.

2. What are the distinctive clinical features which justify the conclusion that the stenosis is benign?

Previous History.—Whatever the suspicions, there is no stronger link in the diagnostic chain than the knowledge gained by painstaking inquiry into the previous histories of these patients. In both men and women the incidents of childhood and puberty as well as the suffering of mature life demand most thorough investigation. It would be an insult to your intelligence if I were to rehearse the data which such study reveals. Included are the clinical pictures of the many primary conditions which have finally led to stenosis. Patients find no difficulty in recalling these; they cover, as a rule, long periods of suffering which have left indelible impressions. A patient with final stenosis and gastrectasia depending upon ulcer has never allowed the sequence of symptoms to fade from his memory; neither has the patient who suffers from perigastritis, far-reaching adhesions with gall-stone disease, forgotten the early or late attacks. Time and patience only are required to hew a way out and through this quarry to the open light. Our results are sufficient to reward the effort. Failures in diagnosis, particularly of the conditions under consideration, are too often the result of hurry and lack of attention to detail.

The *age* of the patient is an important factor.

The more advanced in life, the more likely is the stenosis to be malignant. This rule has its exceptions but they are few. Malignant disease presents a much shorter clinical history. While this may occasionally have latent periods, it is the exception. Chronicity with a long train of symptoms argues against malignancy. The symptoms of malignant stenosis are as a rule continuous, there is less likelihood of long periods of relief or marked periods of exacerbation. The wasting of the patient, the increasing muscular enfeeblement go hand in hand. The blood conditions are entirely different. If there is associated anemia and this is out of proportion to the cachexia, with evidences of dilatation, we are not as a rule dealing with carcinoma.

Heredity must always play an important rôle in the etiology of pyloric cancer. Benign constriction with palpable pylorus presents a much smaller tumor than does cancer. Whether this thickening is due to intra or extra pyloric involvement, there is never such characteristic nodular feel nor is there such suggestive hardness and resistance nor is the mass usually as large as in cancerous disease. Physical examination of neighboring organs and distant glands gives data of great importance. Distant glands as well as those in the abdomen need thorough investigation. Thus Troisier, several years ago, and Pitt in a recent article in the *Practitioner* (April, 1905), have called attention to the enlargment of the glands above the clavicle, particularly behind the left sternomastoid, in pyloric and stomach cancer. Rapidity of growth is characteristic of malignancy. The use of the stomach tube, the examination of the stomach contents, chemical and microscopical, give information which the evenly balanced clinician will add to such other facts as have been made clear by thorough study. It will frequently be possible to recognize by these added physical methods early organic change at the pylorus. Much has been said of the value of free HCl. in the diagnosis of benign and malignant disease of the stomach. I feel that I have no right to repeat on this occasion the results of chemical analysis of the stomach in detail which furnish us with facts for differentiation. There are, however, a few facts which it may be wise to give to the profession in connection with a paper such as is here presented. They are the following:

Stomach contents which show gradual loss of HCl. from time to time, with the addition of organic acids as the free HCl. disappears, evidences of fermentation, must lead to a strong suspicion of malignant disease. It occasionally happens that cases of pyloric cancer continue to show free HCl. to the end. Gradually fading hydrochloric acid, according to Jaworski may be due to the transition of non-malignant to malignant disease as well as to the gradual development of achylia gastrica in cases of mucous gastritis with more or less stenosis at the pylorus. This same change may also take place while malignant disease develops in the scar of an old ulcer and in the included tissue of a non-malignant ulcus ventriculi. Gluzinski makes the following statement: "If it were possible to recognize the transition of an acid gastritis into the mucous form and if, at the same time, it were possible to recognize that this change is due to the formation of a neoplasm and not to the simple cicatricial healing of an ulcer, then it would be possible to make an early differential diagnosis of malignancy." To accomplish this, Gluzinski makes three examinations of the stomach contents, one following the other on the same day. He first examines the remnants of the stomach contents early in the morning. The stomach is thoroughly emptied, chemical and microscopical examinations are made. The organ is then thoroughly washed, egg albumin is given; this is expressed after three-fourths of an hour. At noon beefsteak is given to be followed by the final emptying four hours later. These examinations are repeated several times at intervals of two or three days. If remnants of food are found in the stomach after fasting the question arises whether this is due to the simple atony of the stomach wall or mechanical obstruction, and we are thrown back to the same necessities of observation as before. Gluzinski places great importance upon the fact that with benign stenosis, particularly associated with ulcer, and its cicatrization, we find free HCl. present in varying quantities in all three examinations. It may be assumed that if at the first test, food remnants are found, at the second there is absence of HCl. or only faint presence, and after the beefsteak test marked reduction or complete absence of HCl. with lactic acid and bacteria, the stenosis may be considered malignant. If we find blood with the stomach contents in the wash water with particles of tumor, the diagnosis becomes easy. Lactic acid may be present with achylia gastrica, associated with chronic gastritis, especially when these conditions have more or less stenotic accompaniment. In pernicious anemia, lactic acid is sometimes present with gastrectasia. Here the blood picture must differentiate. It is a rule which cannot be too often repeated that with malignant disease the cachexia is out of all proportion to the anemia, whereas, in those forms of pernicious anemia with gastrectasia and atrophy, the anemia is out of proportion to all other symptoms.

The valuable reports which have reached us from Cohnheim's clinic, many of which are repeated in a paper recently published by Ackermann and Gompertz, which deals with the microscopical examination of the fasting stomach contents and its diagnostic value, when put into practice, added to the knowledge gained by chemical examination, give strong evidence which justifies more accurate differentiation during the incipient stages of the conditions under consideration. The microscopical examination of the stagnant stomach contents with the presence

of HCl. shows, in cases of hyperacidity and hypersecretion that the muscle fiber is partially digested, that the striae have more or less disappeared, that starchy food is not changed. Yeast cells are found in the stomach contents with stagnation. Observers find these in chains and when the stenosis is benign these are accompanied by sarcinæ. Sarcinæ are not found unless the stomach contents contains HCl. Hence, their presence argues, as a rule, in favor of benign stenosis save in exceedingly rare cases of ulcus carcinomatosis. In this latter condition, the test of Gluzinski added, will give valuable information and as the disease advances, if malignant, there will be a gradual decrease of HCl. and sarcinæ; finally, both will be absent when the HCl. is found replaced by lactic, acetic and butyric acids, the sarcinæ by the Oppler-Boas bacilli. The microscopical appearance when the disease is malignant shows quite a different picture. Cohnheim asserts that "about 99 per cent. of the cases with stagnation and Oppler-Boas bacilli or lactic acid are pyloric carcinoma, the remaining one per cent. being either gastritis gravis or a carcimona in the vicinity of the pylorus." Ackermann and Gompertz in their résumé make the statement that "Constant presence of pus, blood and possibly infusoria in the fasting stomach contents is absolute evidence of extrapyloric carcinoma." Still further, "Benign obstruction can be diagnosed early by the finding of sarcinæ, yeast cells in chains, or food remnants." "The early diagnosis of malignant obstruction of the pylorus can be made by the finding of the Oppler-Boas bacillus." There is no pathognomonic symptom of cancerous stenosis.

Large quantities of indican in the urine, an abnormally high urea output are always suggestive of malignancy. The more we deal with the diagnosis of these conditions, the more convinced are we that no other organ requires longer observation than does the stomach, before reaching conclusions which justify diagnosis. I know of no better dictum to place before the student and the hesitating practitioner than that of Leube to which we may unhesitatingly pin our faith in the differentiation of the conditions under consideration. I do not apologize for repeating it here. "Cancer of the stomach is present in all probability if the unquestionable stomach disease has attacked a patient between fifty and sixty years of age who formerly digested all food well. If such a person becomes dyspectic without an evident etiological factor, it may be assumed with considerable certainty that he is developing a gastric cancer." If this fact were better appreciated there would be a large addition to the credit side of accurate and early diagnosis.

Treatment.—When an internist, as conservative as was the late lamented Riegel, makes the following statement, "Gastrectasia following stenosis must be relegated to the field of surgery; in these cases operative interference alone leads to cure," any consideration of medical treatment would seem almost unnecessary. Our surgical friends have established the fact that surgery scores its greatest successes in the treatment of the conditions under consideration, and it is these cases that the internist must refer to them for permanent relief with encouraging and increasing confidence. Our labor will end in cases of extreme benign stenosis as soon as the diagnosis is made. There will always be cases, however, in which for some good reason, either because of moderate stenosis with the hope of ultimate compensatory hypertrophy and a sufficient gastric function, because of inherent weakness in congenital cases, complications in the adult contra-indicating operation, or the refusal of the patient to submit to radical treatment, the physician will be expected to relieve symptoms and make the lives of these patients as comfortable as his art can make them.

Prophylaxis.—Little need be said on the subject of prophylaxis, for little can be done. It is wise to warn patients with ulcer and chronic gastritis against carelessness and it will be the duty of the physician to give such directions as will lead to lasting cure, including the avoidance of food bolting, overeating, dissipation, giving at the same time thorough instruction in such hygienic measures and methods of living and eating as lead to an improved resistance. Further, we must warn the patient against the overloading of the stomach after long periods of restricted diet or after conditions which have led to inanition. The following indications for the medical treatment of benign stenosis of the stomach seem justified:

1. *Such foods only to be taken as the dilated stomach with motor weakness can prepare to be forwarded beyond the point of resistance for further digestion.* The volume of food must be small, concentrated and thin. Diet in these cases can only be rationally prescribed when we depend for our indications upon the degree of stenosis and the absolute or relative weakness of the muscle. The indications are offered by the free use of the stomach tube, the examination of the stomach contents early and late, and the microscope. Foods must be given with a thorough understanding of associated secretory anomalies. It is far better to allow these patients to eat at short intervals, giving but little at a time, than to overload the stomach with the ordinary three daily meals. The quantity and quality of food can be easily determined if the physician will give this matter sufficient time. Experience teaches that in cases of extreme dilatation thirst is by no means relieved by the inordinate use of liquids. Von Mering has again emphasized the fact that fluids are not readily absorbed by the stomach. In these cases the stomach is still further distended by the excessive use of fluids which serve simply to deplete the patient still further by determining an extra supply of blood

to the organ, thereby increasing hypersecretion, aggravating nervous symptoms and occasionally provoking tetany. On the other hand, solid or dry food refuses to pass the obstruction. It is, therefore, wise to pursue a safe middle course, giving foods in concentrated mushy liquid form. For this purpose such liquids should be chosen which will serve to carry other articles of food readily digested and absorbed. Thus bouillon, chocolate, cocoa and milk in small quantities may serve as vehicles for eggs, meat solutions, stale bread, plasmon, somatose, Mosqueras' beef meal, tapioca, arrowroot, rice and many other articles of diet which will occur to the physician as he studies the case. The various gruels and beef juice properly prepared, meat essence, Leube-Rosenthal food, scraped beef, broiled fish, sweet bread, custard, omelet, moderate amount of butter, milk toast, Zwieback with milk, potato puree, spinach and squash are all borne in most cases. There are but few cases associated with hypersecretion and hyperacidity in which food passes the pylorus, aided by such methods as we have at our command, which do not bear scraped raw beef well and to this, with eggs and liquids in small quantities the writer has often pinned his faith with encouraging results. A moderate amount of coffee at breakfast is allowable in the majority of cases. Stimulants are contra-indicated save in extreme conditions. These patients need to be kept under perfect control. For this reason sanatorium or hospital treatment offers most encouragement. In many functional stenoses the use of olive oil or the emulsion of sweet almond oil, as recommended by Cohnheim, serves not only as a food, improving the general condition of the patient, but it seems to relieve spasm and friction. Rectal feeding is sometimes necessary.

2. *Seek to prevent stagnation of food with associated fermentation and the formation of organic acids.* This can best be done by the use of the stomach tube. In these cases lavage does yeoman's service. In the majority of advanced cases the stomach should be washed out twice daily, its contents siphoned at various depths, the tube introduced deep enough to relieve the stomach. Sufficient water should be used. A thorough knowledge of the shape and position of the stomach offers valuable indications for the successful use of the tube. Clean warm water without the addition of drugs is sufficient. Both in functional and organic cases the final flushing with cold water at a temperature of 50° F. seems to exert a tonic influence over the stomach and its musculature, in cases where the stenosis is not extreme. In order to get good and lasting results, this part of our work must be thoroughly done. Carelessness and undue haste or the empiric use of the tube can lead only to indifferent results. *Rational diet founded upon the knowledge gained by the use of the stomach tube and the microscope, with thorough lavage, become the most telling factors in the medical treatment of benign pyloric stenosis.* The accidents following daily lavage in these cases have been so few as not to discourage the treatment which most of us have found fairly successful.

3. *Assist so far as it is possible in the emptying of the distended stomach.* The methods already suggested with cautious massage, room gymnastics, the use of electricity (to which too much confidence has been given by some), with thorough attention to details and the use of drugs, such as shall be mentioned, are all that can be done to meet this indication.

4. *Prevent tetany and other nervous and distant symptoms.* Overcome neuropathic tendencies and conditions in functional stenosis leading to spasm. The writer is fully convinced that he has seen cases of tetany in which symptoms have been postponed by the timely emptying of the stomach. At the present time he has under observation a patient who refuses surgical interference, with benign stenosis, monstrous dilatation, hypersecretion and hyperacidity. Tetany can be promptly produced by the neglect of thorough lavage. It matters not what theory we adopt concerning the production of tetany, the fact remains that the majority of cases are associated with monstrous dilatation, residual stagnant food and hypersecretion. All facts warrant the prevention of such accumulation. Methods which overcome neuropathic tendencies and conditions which lead to functional stenosis require a thorough consideration of all that these cases present, attention to hygiene, exercise, diet and much detail which must of necessity occur to the thinking therapeutist.

5. *Improve the general condition of the patient and hold this at par or above par whenever possible.* This includes all of the methods already considered with such tonic treatment, moral suasion, change of air and scene as are indicated by the individual cases.

6. *Treat associated symptoms as they arise by rational and natural methods, including the use of drugs, attempting by these to overcome or counteract the effect of secretory and motor anomalies.* These indications cover a broad field of activity. Guard against pernicious activity. There is a strong tendency in the treatment of these conditions toward polypharmacy. The use of the alkalies and such remedies as act upon the secretions of the intestines and their musculature causing free movement of the bowels which tend to remain constipated, are indicated in many cases. Repeated tests give indications for the administration of alkalies or acids. With hypersecretion and hyperacidity we have recently had excellent results from the use of suprarenal extract and belladonna, combined with mechanical treatment and alkalies. With peristaltic unrest and functional stenosis, belladonna, gelsemium and cherry-laurel water have frequently relieved symptoms. Eserine and the remedies above-mentioned have relieved associated flatulence and

belching of gas. Strychnine, nux vomica and the bitter tonics have in many cases served to tone the patient and relieve symptoms. Spasm has sometimes been relieved by the use of small doses of atropine, the faradic current as recommended by Kussmaul; only rarely have we resorted to codeia. Recently, encouraged by an article from the pen of Haas-Brunn in the March number (1905) of *Die Therapie der Gegenwart* on "Eumydrin, ein Atropin-Ersatz, in der Therapie der Magen- und Darmkrankheiten," we have used the drug with some success. In no case has it been used long enough to offer positive conclusions. Resorcin, bismuth salts, benzonaphthol, Carlsbad salts and physol, made according to Merck's formula, may be used for the relief of troublesome symptoms.

With thiosinamine recently suggested, to be used hypodermatically (10 per cent. glycerin and water solution) and with the use of scopolamin the writer has had no experience. The galaxy of remedies suggested in our text-books proves conclusively that there is no single remedy upon which we can rely for the treatment of symptoms associated with stenosis of the pylorus. Rational and natural therapy, made as simple as possible, will prove most satisfactory.

ON THE RELATIONS OF SOME OF THE METABOLIC DISEASES TO INTESTINAL DISORDERS.*

BY THOMAS B. FUTCHER, M.B. (TOR.),
OF BALTIMORE, MD.;
ASSOCIATE PROFESSOR OF MEDICINE, JOHNS HOPKINS UNIVERSITY, BALTIMORE.

WHEN I was asked to contribute a paper on the relation of certain metabolic diseases to intestinal disorders, I consented to do so with some hesitation. I fully appreciated the fact that the well-being of the individual was intimately connected with the proper carrying on of the normal intestinal functions; also that many of the ailments the human organism is subject to are dependent upon derangements in the intestinal canal. My hesitancy was mainly due to the fact that I realized that but few, if any, of the diseases we are accustomed to designate as metabolic in origin, such as gout, diabetes, etc., are due essentially to disorders in the intestine. On considering the matter, however, I recalled that some of the more obscure and rare metabolic diseases have been attributed by investigators to disturbances in intestinal function. I thought that a review of some of the main facts concerning these diseases, particularly regarding alkaptonuria, ochronosis, and cystinuria, might be of interest to the members of the association.

I. Alkaptonuria and Ochronosis.—Alkaptonuria was first described by Bödeker[1] in 1859. The characteristics of the urine in this condition are briefly as follows: When voided it has a normal appearance, but rapidly acquires a deep-brown color and ultimately becomes black on exposure to the air. The brown color is greatly intensified by the addition of an alkali, its development being accompanied by the absorption of oxygen from the air. The urine is of normal specific gravity. It reduces alkaline copper sulphate solutions with the aid of heat, the mixture at first being of an inky-black color. Ammoniacal silver nitrate solutions are reduced in the cold. It does not reduce alkaline solutions of bismuth. The urine does not ferment with yeast, and it is optically inactive. The addition of a ferric chloride solution produces a transitory bluish-green color. Diapers and linen moistened with the urine turn a deep brown color on exposure to the air.

Bödeker called the substance which produced these interesting urinary changes alkapton (from "alkali" and "καπτειν," to absorb freely), owing to the property that urine containing it possessed of rapidly absorbing oxygen from the atmosphere in the presence of an alkali. He did not isolate the substance. It was not until 1891 that Baumann and Wolkow[2] demonstrated that the peculiar reactions of alkapton urine were due to the presence of homogentisic acid (Homogentisinsäure, $C_8H_8O_4$ or $C_6H_3(OH)_2.CH_2.COOH$, which is the dioxyphenylactic acid derived from hydrochinon. This acid has been found in practically all the cases reported subsequent to that date and in the urine of some of the cases previously reported, and is now conceded by all observers to be the cause of the urinary changes in alkaptonuria. The lead salt of the acid, lead homogentisate, is easily obtained by heating the urine nearly to the boiling point and adding five or six grams of neutral lead acetate to each 100 c.c. of urine and allowing it to cool for twenty-four hours. The lead salt crystallizes out in the form of brownish, stellar-shaped, acicular crystals, watery solutions of which give all the reactions of the original urine. The acid itself crystallizes with one molecule of water in large, transparent, prismatic crystals, which become non-transparent at the temperature of the room with the loss of the water of crystallization. They melt at 146.5° to 147° C. They are soluble in water, alcohol and ether, but nearly insoluble in chloroform.

The question now arises, what is the source of the homogentisic acid? It is this side of the consideration of alkaptonuria which brings it into bearing with the subject under discussion. Baumann, Wolkow and Embden, and others, believe that homogentisic acid is derived from tyrosin. Tryosin ($HO.C_6H_4.C_2H_3(NH_2).COOH$), or amido-oxyphenylacetic acid, is a normal product of trypsin digestion of proteids in the upper part of the intestinal tract, being formed by a hydrolytic cleavage process. The above-mentioned investigators have shown that when tyrosin is fed by mouth to an alkaptonuric individual nearly the whole of it is excreted as homogentisic acid, whereas the acid is not excreted in the urine when tyrosin is ingested by a healthy person. Beyond the fact that tyrosin and homogentisic acid

* Read before the American Gastro-Enterological Association, New York, April 24, 1905.

are both aromatic acids, the two have nothing special in common, although of somewhat similar chemical constitution. The conversion of the former into the latter involves a shifting of the hydroxyl groups of the benzene ring; in other words, a simultaneous oxidation and reduction within the molecule. The view generally held regarding the etiology of alkaptonuria is that originally advanced by Baumann and Wolkow, who thought that the conversion of tyrosin into homogentisic acid is due to bacterial activity, and consequent putrefactive conditions in the upper intestinal tract. They even suggested that there might be a specific bacterium in such cases.

Some clinical facts regarding alkaptonuria may not be without interest. It is congenital in the vast majority if not all of the cases. In a good many of the cases a history is obtained that the individual's urine in infancy stained the napkins a dark-brown color. It persists throughout life. That it is rare is demonstrated by the fact that A. E. Garrod[3] found that only 40 cases had been reported up to 1902. Four of these were reported from the United States, one by myself in 1898. The condition predominates in males. Of the 40 cases, 29 were males and 11 females. The anomaly is likely to make its appearance in two or more brothers and sisters whose parents are normal and among whose forefathers there is no record of its having occurred. There is only one recorded instance of alkaptonuria having been transmitted from an affected parent to a descendant. This occurred in one of two sons of the patient with alkaptonuria I reported.[4]

The investigations of A. E. Garrod have thrown new light on the subject and given us a new conception of the anomaly. As a result of his research he finds that a very large percentage of the cases, concerning which he has been able to collect data, occurred in individuals who are the offspring of the marriage of first cousins, who do not themselves manifest the peculiarity. He points out that in this respect alkaptonuria resembles albinism and possibly also cystinuria. He has advanced the view, therefore, that alkaptonuria is a "sport" or alternative mode of metabolism, congenital in origin and persistent throughout life. In favor of this view is the fact that each individual excretes from day to day a very constant amount of homogentisic acid, the variations being within narrow limits and easily explained by fluctuations in the amount of proteid food taken from day to day. The average daily excretion of the acid has ranged between 2.6 grams in a child three and one-half years old and 5.9 grams in a young man of eighteen years. One would reason, therefore, that alkaptonurics suffer from some inherited metabolic defect, and it seems probable that this defect is closely related to the metabolism of tyrosin. This conception necessarily modifies the view previously held that alkaptonuria results from putrefactive changes in the upper intestinal tract. Being apparently a congenital anomaly, it does not seem possible that it is due to abnormal bacterial activity in the intestine. It does not, however, weaken the view that it is associated with some intestinal digestive disturbance. It would appear that there is some congenital defect in proteid digestion in the intestine whereby homogentisic acid is formed instead of tyrosin.

The general health of alkaptonurics appears to be in no way impaired. Until a very recent date, the only clinical significance that alkaptonuria was thought to possess, rested on the fact that a number of the cases, before recognition, have been mistaken for diabetes mellitus, owing to the power the urine possessed of reducing alkaline copper solutions. The fact that the urine does not ferment, is optically inactive and does not reduce bismuth, together with its peculiar color on standing and on the addition of an alkali, should have obviated such a mistake, however.

Recent observations indicate that a pathologic condition of great interest and rarity is associated with and probably due to the metabolic disturbances in alkaptonuria. This is the remarkable affection known as "ochronosis" or pigmentation of the cartilages, first described by Virchow, in 1866. In Virchow's case there was remarkable pigmentation of the cartilages of the body of a man, aged sixty-seven years, who died of the effects of an aneurism. He gave the name ochronosis to the condition owing to the ochre-like discoloration of the cartilaginous tissues. Osler,[5] one year ago, reported two cases of ochronosis in alkaptonuric brothers, both of which cases had been previously reported in the literature as alkaptonurics, one by Marshall and the other by myself, and constituting two of the four instances of alkaptonuria observed in this country. Previous to Osler's two cases, only seven instances of ochronosis had been recorded. Two of them were described as having "melanuria," but Albrecht,[6] who published the seventh case in 1902, deserves the credit of first suggesting an association between the disease and alkaptonuria. The urine of his patient was dark colored and reduced sulphate of copper solutions, but homogentisic acid was not absolutely demonstrated.

Osler's first case was a man fifty-seven years of age and was the alkaptonuric I reported. The sclerotic coats of the eyes showed areas of pigmentation on the exposed portions. The cartilages of the ears, particularly the concha and helix, presented a remarkable blue-black discoloration. A noteworthy feature not previously recorded was that a butterfly-shaped area of the skin over the nose and cheeks was also remarkably pigmented, the pigmentation very closely resembling powder marks. The discoloration of the sclerotics and of the ears was present, but less marked, eight years ago. There was a very marked bowing of the spine with the convexity backward and he walked with a marked stoop of the shoulders. The patient has been under my own observation for some time and he occasionally has some stiffness of the knee-joints in

which there is marked crepitation on passive movement. The pigmentation of the cartileges of the metacarpo-phalangeal joints has recently been evident through the skin over the knuckles. The other brother, forty-nine years of age, presented a similar but less striking pigmentation of the sclerotics and cartilages of the ears. He had noticed the pigmentation for several years. The patient died of pneumonia but no autopsy could be obtained. There is little doubt but that the deep-seated cartilages of both these cases would have manifested the same changes.

The probabilities, therefore, are that ochronosis is another manifestation of the metabolic disturbances in alkaptonuria, which previously had been recognized only by the urinary changes. There is no definite evidence that the ochronotic condition in any way affects the health or the body functions. It is worthy of note, however, that in one of Osler's cases the joint affection objectively simulated conditions found in arthritis deformans. Some of the cases of ochronosis have not been associated with alkaptonuria and Garrod is inclined to the view that there may be two distinct groups of cases. The interesting fact is that Ogden's alkaptonuria case, another of the four American cases, has recently been found to have the ochronotic pigmentation. Whereas all alkaptonurics do not have ochronosis, it will probably be shown eventually on careful examination that most cases of ochronosis exhibit alkaptonuric changes in the urine.

II. Cystinuria.—Another metabolic affection which has generally been regarded as being dependent on intestinal disturbances is cystinuria, characterized usually by the spontaneous deposition of hexagonal crystals of cystin in the urine. The condition is rare, as shown by the fact that up to November, 1904, Simon and Campbell[7] found that only 131 cases had been reported in the literature. Cystin ($C_6H_{12}N_2S_2O_4$) is the disulphide of di-amido-ethidenelactic acid. According to Baumann and Goldmann a substance similar to cystin occurs in very small amounts in normal urine. This substance occurs in large quantities in the urine of dogs after poisoning with phosphorus. Although it has not been definitely demonstrated that cystin is a normal constituent of the urine of human individuals, yet there is good reason to believe that cystin is an intermediate product of normal metabolism and that it is ordinarily broken up with oxidation of the greater part of its sulphur to sulphuric acid. According to one view cystin is apparently preceded in the course of normal metabolism by cystein. This cystein is regarded as a lactic acid, $CH_3CH(OH)COOH$, in which one H is replaced by NH, and the OH by SH. Cystein is therefore to be regarded as an amidothiolactic acid. V. Bergmann, Simon and Campbell, as a result of their researches, are led to conclude that a certain amount of the cystin liberated during normal metabolism is eliminated in the bile in combination with cholalic acid as taurocholic acid, while the remainder appears in the urine in completely oxidized form.

The clinical significance of cystinuria is not great, because it is commonly unassociated with definite symptoms and may be well developed in persons apparently in good health. Occasionally the individuals have disordered digestions, at times associated with anemia. Cystinuria may be of surgical importance owing to the fact that renal calculi composed of cystin may occur. The crystals of cystin when shaken up with urine present a curious sparkling appearance. The urine on decomposing emits a very offensive odor of sulphureted hydrogen, owing to the large amount of sulphur contained in the cystin molecule. Cystinuria is much commoner in males than in females.

What occasions the development of cystinuria? The view usually held is that the condition is closely related to putrefactive changes in the intestinal tract. Probably the most striking feature at present known to us in connection with the pathology of cystinuria is the almost regular association of the condition with the presence in the excreta of putrefactive basic bodies or ptomains belonging to the class of diamines. The diamines are bodies in which two amine (NH_2) groups are united to a diatomic alcohol radical of the olefine series of hydrocarbons. The diamines of greatest interest in connection with cystinuria are *putrescin*, which is tetra-methylen-diamin and *cadaverin*, which is penta-methylen-diamin. These were found in the urine in cystinuria by Baumann and Udránszky as well as in the intestinal contents, while under normal conditions they are not present. Hammarsten thinks that a connection probably exists between the formation of diamines in the intestine, by the peculiar putrefaction in cystinuria, and cystinuria itself. Herter asserts that it is, on the whole, not unlikely that both the diamines formed by putrefaction in the intestine and the cystin formed in the course of metabolism are the expression of an obscure form of putrefaction in the intestine. It must be remembered, however, that a number of competent observers, among them Cammidge and Garrod, have not been able to demonstrate the presence of these diamines in the urine and feces of the cystinuric individuals they have examined.

The recent view of Simon and Campbell must be mentioned here. It will be recalled that in normal metabolism they think that the cystin of the body is eliminated in the bile in combination with cholalic acid as taurocholic acid, while the remainder appears in the urine in completely oxidized form. They found that while the administration of cholalic acid in the non-cystinuric individual leads to a diminished elimination of sulphur in the urine, this does not occur in the cystinuric subject. This suggests to them that in the cystinuric individual taurocholic acid is possibly not formed at all, in which

case they are forced to assume either that all the sulphur liberated in the body is eliminated in the urine, or that a portion is excreted in the bile in a form different from taurocholic acid.

It is of interest to point out here that A. E. Garrod advances the view that cystinuria, like alkaptonuria and albinism may, on more thorough investigation, turn out to be an example of a "chemical sport." In this connection he cites a most interesting family described by Pfeiffer, which he thinks supports this view. Both parents were normal, but all their four children, two daughters and two sons, were cystinuric. The elder daughter had two children, neither of whom was cystinuric.

III. Diabetes and Gout.—In a discussion of this kind it seems advisable to say something of these two most characteristic examples of metabolic diseases, if only to point out how little dependent they are upon disorders in intestinal function. The writer fully appreciates the fact that many gastro-intestinal disorders occur as symptoms of these two diseases, but time will not permit their being considered here.

According to the latest conception of the disease, diabetes results from disturbances in sugar metabolism owing to deficiency in the production of glycolytic bodies formed in the pancreas and muscles (Cohnheim), and which are necessary for the final combustion of the sugars in the latter tissues. It is doubtful whether intestinal disorders in any way, therefore, play any part in the etiology of diabetes mellitus. The "alimentary" glycosurias are not dependent upon defective intestinal function but rather to the sudden ingestion of some form of sugar in such a large quantity that the liver has not time to convert all the glucose into glycogen, thus storing it up for future use. Consequently the excess passes over into the general circulation producing a hyperglycemia and a resultant glycosuria.

It is possible, according to recent researches, that there may be intestinal influences in the production of one of the auto-intoxications occurring in diabetes, namely acetonemia. The work of Geelmuyden, Schwarz, Waldvogel and Magnus-Levy has shown that acetone is formed largely, if not entirely, from fat and not from proteids as was formerly believed. Schwarz found that in severe diabetics the administration of butyric acid caused a marked increase in the acetone production. Blumenthal and Neuberg demonstrated the interesting fact that only the butyric acid given by mouth, and not that given subcutaneously, caused an increase in the acetone output. They think that it is necessary for the butyric acid to first undergo some change in the intestinal canal and that this may be due to bacterial influences.

So far as we are aware at the present time intestinal disorders play no special part in the etiology of gout. We know so little concerning the causes for the marked disturbances in the nitrogen metabolism in gout that we are not warranted in making a dogmatic statement that disorders in the intestinal functions play no part in the etiology of this disease.

BIBLIOGRAPHY.

1. Bödeker. Zeit. f. ration. Med., Bd. VII, 1859, S. 130; and Annal. der Chem. u. Pharm., CXVII, 1861, or new series, XLI, 98.
2. Baumann und Kolkow. Zeit. f. phys. Chemie, Bd. XV, 1891, S. 228.
3. Garrod. The Lancet, December 13, 1902.
4. Futcher. New York Medical Journal, January 15, 1898.
5. Osler. The Lancet, January 2, 1904.
6. Albrecht. Zeitschrift für Heilkunde, 1902, Bd. XXIII, p. 366.
7. Simon and Campbell. The Johns Hopkins Hospital Bulletin, Vol. XV, No. 164, November, 1904.

THE IMMEDIATE EFFECT OF BILIARY RETENTION ON THE SECRETORY FUNCTION OF THE STOMACH.*

BY JULIUS FRIEDENWALD, A.M., M.D.,
OF BALTIMORE, MD.;
CLINICAL PROFESSOR OF DISEASES OF THE STOMACH; COLLEGE OF PHYSICIANS AND SURGEONS, BALTIMORE, MD.

THE fact that one digestive secretion exerts a marked influence upon another secretion has been known for a long time. Thus George Sticker[1] was the first to show that the saliva exerted a marked influence in the secretion of gastric juice and that this was of such a nature that an absence of salivary secretion not only resulted in an absence of amylolysis but that the proteolysis in the stomach was much retarded thereby. This discovery of Sticker has been confirmed by Biernacki[2] and by myself.[3]

More recently Pawlow,[4] in a beautiful series of experiments on dogs, has shown that the gastric secretion exerts a similar influence on the pancreatic secretion in so far that the former excites a flow of the latter secretion. Observations on the effect of the bile on the gastric secretion have been made by a number of observers. Hayem[5] was the first to show that usually in cases of hypertrophic cirrhosis of the liver a hyperchlorhydria and hypersecretion is found; he did not point out, however, that this condition was in any way connected with the jaundice. Leva[6] too found a similar condition in a few cases of hypertrophic cirrhosis of the liver. N. Kirikow[7] verified Hayem's results. In regard to the gastric chemistry in biliary retention various authors have obtained different results. V. Noorden,[8] Johnson and Behm,[9] Schiff,[10] Kirikow,[11] Malkow,[12] found hyperacidity, whereas Leva,[13] Schneyder;[14] Von Jaksch[15] found subacidity; others found no change whatever (Riegel,[16] Swirelin[17]). The number of observations of these investigators was very small. In addition to this, inasmuch as these writers made as a rule one test of the gastric contents and rarely repeated the examination, they could not obtain a thorough account of the effect of the biliary retention on the secretory function of the stomach. It is a well-known fact that all forms of intoxication of the system can markedly influence the gastric secretion and change its character (Ank-

* Read at the Annual Meeting of the American Gastro-Enterological Association, at New York, April 24, 1905.

indinov,[18] Hanot et Boix[19]). A cholemic condition due to biliary retention is much like the uremic condition due to ligation of the ureter in which marked disturbances of gastric secretion are known to take place (Ankindinov[18]).

The first really systematic examination in this regard was made by S. Simnitzky.[20] He investigated especially cases of catarrhal jaundice, because in this disease the jaundice gradually increases and then gradually again diminishes. Beginning the examinations early and continuing them as the jaundice intensified and as it again diminished, the direct effect of the jaundice upon the gastric secretion could be observed. He investigated the gastric contents of the 12 patients; consisting of 7 cases of catarrhal jaundice, 1 case of Weil's disease, 3 cases of hypertrophic cirrhosis of liver, 1 case of jaundice due to compression of the common duct by a pancreatic cancer. In all 81 examinations were made. He utilized an Ewald breakfast of 35 grams of bread and 250 c.c. of tea.

He found that in those cases in which there was at first a complete biliary retention which gradually began to clear up, the total acidity as well as the percentage of free hydrochloric acid gradually diminished, and that with the retention of the bile the gastric acidity increased in proportion to the degree of biliary retention; the increase in acidity being due mainly to free HCl.

In order to investigate this condition more fully Simnitzky made a certain number of observations on dogs. He performed a gastrotomy according to Pawlow's method and studied the gastric secretion and then ligated the common bile duct and further investigated this secretion. He found that after ligation the acidity of the gastric juice rose markedly, about 50 per cent.

My own observations include eleven cases of which eight were cases of catarrhal jaundice, one of hypertrophic cirrhosis of the liver and two of cholelithiasis; in all 115 examinations were made. In all of our observations we were careful not to include any cases in our list which were accompanied with fever or in which there was any question of an associated gastric catarrh. The gastric contents were examined for the total acidity by titration with one-tenth normal sodium hydrate solution, using phenolphthalein as an indicator; the percentage of free hydrochloric acid was determined in some cases by means of Mintz's method, in others by Töpfer's method. The cases of catarrhal jaundice were mild forms, running their course in five or six weeks. As Simnitzky points out, the variation in the state of the gastric secretion in cases of jaundice can be best observed in catarrhal icterus, inasmuch as the jaundice in this disease develops gradually, reaches a maxium of intensity and again gradually subsides, affording an excellent opportunity to observe the state of the gastric secretion during the varying intensity of the jaundice. In the eight cases of catarrhal jaundice studied as shown in the accompanying tables (See Cases 1, 2, 3, 4, 5, 6, 7, 8), similar results were observed.

The jaundice being slight at the beginning of the attack the increase in the total acidity as well as the free hydrochloric acid is found slightly above normal; gradually as the jaundice increases these factors increase proportionately and again decrease as the jaundice diminishes. So constant is this variation that we can with almost certainty predict from the condition of the acidity of the gastric secretion when the jaundice is about to diminish or disappear.

Case IX of hypertrophic cirrhosis of the liver is very interesting as showing the effect of biliary retention upon the gastric secretion in this disease. The patient, a man of forty-one years of age, had been ill of this disease for four months when he presented himself for treatment. His symptoms were marked, there was the presence of pain in the region of the liver, enlargement of the liver and spleen and an absence of ascites and the jaundice which was at times moderate and at times marked. With a moderate degree of jaundice the total acidity of his gastric contents would be as low as 70 and the percentage of free hydrochloric acid as low as .21 per cent.; while, when the jaundice was marked the total acidity would run as high as 100 and the percentage of free hydrochloric acid as high as .28 per cent.

Of even greater interest in this regard are the two cases of cholelithiasis; both of these cases were common duct cases. They were never accompanied with fever, and jaundice was always present during the attacks which would disappear again in from eight to nineteen days. In both of these cases coincident with the appearance of the jaundice there was an increase in the total acidity as high as 110 and of the percentage of free hydrochloric acid as high as .26 per cent., whereas when the attack of colic had subsided the total acidity would fall as low as 40 and the percentage of free hydrochloric acid as low as .11 per cent.

From our own observations as well as those of Simnitzky we feel justified in concluding that in conditions of biliary retention there is a marked tendency to an increase in the secretion of the hydrochloric acid of the gastric secretion. It is probable, as Simnitzky points out, that this alteration is due to a disease or asthenic state of the secretory cells of the stomach due to poisoning with biliary products.

Case I.—M. F., aged forty-five years.—CATARRHAL JAUNDICE.

No.	Date.	Total acidity.	Per cent. of free acid.	Degree of Jaundice.
1	Jan. 8	70	0.2322	Slight
2	Jan. 12	94	0.3114	Marked
3	Jan. 20	88	0.2841	Marked
4	Jan. 22	94	0.2917	Marked
5	Feb. 2	84	0.2874	Marked
6	Feb. 8	86	0.2716	Marked
7	Feb. 21	72	0.2523	Slight
8	Feb. 28	68	0.2403	Slight
9	March 22	60	0.2013	None
10	March 28	54	0.1421	None
11	April 4	48	0.1222	None
12	April 10	52	0.1316	None

Case II.—A. T., female, aged thirty-four years.—CATARRHAL JAUNDICE.

No.	Date.	Total acidity.	Per cent. of free acid.	Degree of Jaundice.
1	Dec. 5	68	0.1913	Slight
2	Dec. 15	104	0.3304	Marked
3	Dec. 23	106	0.3119	Marked
4	Jan. 14	84	0.2751	Marked
5	Jan. 25	72	0.2416	Slight
6	Feb. 10	40	0.1241	None
7	Feb. 17	44	0.1214	None
8	Feb. 28	46	0.1354	None

Case III.—F. G., female, aged twenty-two years.—CATARRHAL JAUNDICE.

No.	Date.	Total acidity.	Per cent. of free acid.	Degree of Jaundice.
1	June 4	70	0.1781	Slight
2	June 9	84	0.2659	Marked
3	July 20	70	0.2384	Marked
4	Aug. 10	42	0.1254	None
5	Aug. 18	44	0.1189	None
6	Aug. 28	40	0.1176	None

Case IV.—Male, aged thirty-one years.—CATARRHAL JAUNDICE.

No.	Date.	Total acidity.	Per cent. of free acid.	Degree of Jaundice.
1	April 4	74	0.2214	Slight
2	April 10	82	0.2703	Marked
3	April 18	88	0.2792	Marked
4	May 9	80	0.2699	Marked
5	May 19	74	0.2419	Marked
6	June 6	60	0.2120	Slight
7	June 20	44	0.1201	None
8	June 25	40	0.1324	None
9	June 28	46	0.1192	None
10	July 1	50	0.1241	None

Case V.—Female, aged twenty-four years.—CATARRHAL JAUNDICE.

No.	Date.	Total acidity.	Per cent. of free acid.	Degree of Jaundice.
1	Feb. 4	68	0.1817	Slight
2	Feb. 8	90	0.2754	Marked
3	Feb. 12	100	0.2951	Marked
4	Feb. 20	88	0.2634	Marked
5	Feb. 25	84	0.2712	Marked
6	March 12	78	0.2316	Slight
7	March 20	70	0.2219	Slight
8	April 9	50	0.1512	None
9	April 12	48	0.1229	None
10	April 18	45	0.1182	None
11	April 22	48	0.1174	None
12	April 28	50	0.1093	None

Case VI.—Male, aged forty-one years.—CATARRHAL JAUNDICE.

No.	Date.	Total acidity.	Per cent. of free acid.	Degree of Jaundice.
1	Oct. 3	74	0.1612	Slight
2	Oct. 15	86	0.2609	Marked
3	Oct. 25	80	0.2671	Marked
4	Nov. 18	88	0.2789	Marked
5	Dec. 1	70	0.2219	Slight
6	Dec. 20	54	0.1348	None
7	Dec. 28	42	0.1218	None
8	Dec. 30	40	0.1114	None

Case VII.—Female, aged forty-eight years.—CATARRHAL JAUNDICE.

No.	Date.	Total acidity.	Per cent. of free acid.	Degree of Jaundice.
1	June 10	68	0.1719	Slight
2	June 18	92	0.2846	Marked
3	June 29	110	0.2982	Marked
4	July 5	90	0.2879	Marked
5	July 12	88	0.2756	Marked
6	July 20	92	0.2874	Marked
7	July 28	84	0.2769	Marked
8	Aug. 5	88	0.2642	Marked
9	Aug. 9	86	0.2718	Marked
10	Aug. 12	78	0.2469	Marked
11	Aug. 20	70	0.2191	Slight
12	Aug. 27	60	0.1918	None
13	Sept. 3	54	0.1216	None
14	Sept. 9	52	0.1189	None
15	Sept. 13	56	0.1072	None

Case VIII.—Male, aged forty years.—CATARRHAL JAUNDICE.

No.	Date.	Total acidity.	Per cent. of free acid.	Degree of Jaundice.
1	April 4	70	0.2191	Marked
2	April 12	84	0.2684	Marked
3	April 18	92	0.2784	Marked
4	May 5	98	0.2796	Marked
5	May 9	86	0.2687	Marked
6	May 15	84	0.2695	Marked
7	June 4	78	0.2421	Marked
8	June 30	58	0.1189	None
9	Aug. 5	52	0.1213	None
10	Aug. 8	44	0.1184	None

Case IX.—Male, aged forty-one years.—HYPERTROPHIC CIRRHOSIS OF THE LIVER.

No.	Date.	Total acidity.	Per cent. of free acid.	Degree of Jaundice.
1	June 4	70	0.2219	Moderate
2	July 9	78	0.2318	Moderate
3	Aug. 5	94	0.2659	Marked
4	Aug 20	100	0.2864	Marked
5	Sept. 8	72	0.2214	Moderate
6	Sept. 15	70	0.2187	Moderate
7	Sept. 23	74	0.2089	Moderate
8	Oct. 20	80	0.2501	Marked
9	Nov. 10	84	0.2582	Marked
10	Dec. 12	82	0.2517	Marked

Case X.—Female, aged thirty-five years.—CHOLELITHIASIS.

No.	Date.	Total acidity.	Per cent. of free acid.	Degree of Jaundice.
1	Feb. 4	45	0.1182	None
2	Feb. 20	40	0.1143	None
3	March 25	80	0.2483	Marked
4	March 28	84	0.2591	Marked
5	April 2	92	0.2683	Marked
6	June 6	50	0.1382	None
7	June 12	54	0.1243	None
8	July 2	45	0.1134	None
9	Sept. 8	90	0.2684	Marked
10	Sept. 11	84	0.2517	Marked
11	Sept. 18	76	0.2481	Slight
12	Nov. 7	42	0.1243	None
13	Nov. 14	44	0.1189	None
14	Nov. 22	46	0.1146	None

Case XI.—Male, aged forty-two years.—CHOLELITHIASIS.

No.	Date.	Total acidity.	Per cent. of free acid.	Degree of Jaundice.
1	June 6	88	0.2482	Marked
2	June 12	110	0.2694	Marked
3	June 18	84	0.2514	Marked
4	Aug. 10	42	0.1345	None
5	Aug. 14	48	0.1394	None
6	Sept. 28	92	0.2487	Marked
7	Oct. 4	96	0.2416	Marked
8	Oct. 16	72	0.2386	Slight
9	Dec. 6	46	0.1387	None
10	Dec. 20	40	0.1313	None

LITERATURE.

1. Sticker. Volkmann's Sammlung klinische Vorträge d. inneren Medicin, No. 100; 297 S. 2699.
2. Biernacki. Die Bedeutung der Mundverdauung und des Mundspeichels für Thätigkeit des gesunden und kranken Magens, Zeitschrift für klinische Medecin, Bd. 21, H. 1 u. 2.
3. Friedenwald, J. The Importance of the Saliva in Gastric Digestion. International Medical Magazine, August, 1896.
4. Pawlow. Work of the Digestive Glands, by Labbe, in La Presse Medicale, Nov. 26, 1902.
5. Hayem. Rapports de la gastrite hyperpeptique avec divers états pathologiques. Bullet. Medic. 20. vi; 1894.
6. Leva. Virchow's Archiv, Bd. 132; 1893.
7. Kirikow. Dissertation, St. Pet., 1894.
8. V. Noorden. Lehrbuch der Pathologie des Stoffwechsels.
9. Johnson and Behm. Zeitschr. f. klin. Med., Bd. 32; p. 497; 1893.
10. Schiff. Arch. f. Verdauungskrankh., Bd. 6, p. 107.
11. Kirikow. Dissertation, St. Pet., 1894.
12. Malkow. Dissertation, St. Pet., 1897.
13. Leva. Virchow's Archiv, Bd. 132; 1893.
14. Schneyder. Virchow's Archiv, Bd. 148; 1897.
15. Jaksch (see Biernacki). Deut. Archiv f. klin. Med., 1891.
16. Riegel. Zeitschrift. f. klin. Med., Bd. 11, p. 166.
17. Swirelin. Dissertation, 1891.
18. Ankindinov. Dissertation, St. Pet., 1893.
19. Hanot et Boix. Bullet. Med., 1894.
20. Simnitsky. Ueber den Einfluss der Gallenretention auf die secretorische Thätigkeit der Magendrüsen. Berl. klin. Wochenschrift, October 28, 1901, and Russki Vrach, January 4, 1903.

SULPHONATED GUAIACOL COMPOUNDS.*

BY H. C. JACKSON, PH.D.,
AND
GEORGE B. WALLACE, M.D.,
OF NEW YORK.

Of the numberless remedies which have been employed in the treatment of pulmonary tuberculosis, creosote has been for many years one of the greatest importance. It is held by most clinicians that this drug not only checks expectoration and renders it less purulent, but brings about an improvement in the appetite and digestion as well, and in fact exercises a markedly beneficial influence on the whole general condition. Since guaiacol forms from 60 to 90 per cent. of creosote, it is but natural that it be employed as a substitute for creosote. In the past few years it has been used in this way very extensively, and apparently the same beneficial effects are induced by it as the impure mother-substance, creosote. Whether the good results obtained are due to its excretion by the lungs and antiseptic action there or whether they are to be explained by its antiseptic and stimulant action on the alimentary tract, is a question which need not here be discussed.[1] It is known that guaiacol is a somewhat weak antiseptic, although it seems to have a rather pronounced germicidal effect on the tubercle bacillus[2]; that it is excreted by the lungs in small part but chiefly by the kidneys, about 50 per cent. of the ingested guaiacol being found in the urine as an ethereal sulphate, a smaller amount as a glycuronate and some as a more highly oxidized phenol.[3] In the changes it undergoes in the body it resembles carbolic acid, from which, indeed, it differs but slightly chemically. Like the corresponding compound of carbolic acid, guaiacol ethyl sulphate is non-toxic. As a therapeutic agent guaiacol has a number of objectionable features. The form in which it exists—a fluid almost insoluble in water, its taste and odor and its irritant properties, often producing gastric disturbance and making its use by subcutaneous injection a rather painful process, are disadvantages which have stimulated chemists to attempt to make synthetic derivatives, which, possessing the beneficial guaiacol action, are without its disagreeable features. In the past few years a number of guaiacol derivatives have been introduced and extensively advertised by manufacturing chemists. Needless to say flattering clinical reports, each as a rule consisting of observations on a very limited number of cases, have followed. Guaiacol carbonate may be taken as an example. This substance has the formula $CO(OC_6H_4OCH_3)_2$. It is a crystalline powder, insoluble in water, and practically devoid of the irritating properties of guaiacol. Eschle[4] has shown that the compound is broken up in the intestine and from 22 to 66 per cent. guaiacol set free. Still more recently certain compounds have been made in which guaiacol exists in the form of a sulphonate, the sulphur atom being linked directly to a carbon atom of the guaiacol ring. Thiocol is one of these, and has the formula $C_6H_3\begin{cases}OH\\OCH_3\\SO_3K\end{cases}$

This substance is crystalline, free from irritant properties, and quite soluble in water. It has been warmly recommended by a number of practioners. A compound of this chemical nature is, according to the pharmacological standpoint, nearly certain to be worthless, since it is common experience that the introduction of the sulphon group into an aromatic group, renders a previously active substance inert and non-toxic, and that the substance is absorbed, circulates in the body, and is excreted without being split up to any appreciable degree.[5] In order that such a combination possess the typical guaiacol action it must either be antiseptic and irritant itself or else be broken up in the intestine or in the tissues after absorption in such a way that guaiacol is set free. If the compound is not antiseptic and is non-toxic, and passes through the system unchanged it can not of course induce the guaiacol effects and the sooner this is recognized by the profession the fewer will be the disappointments bound to occur after its employment.

* From the Pharmacological Laboratory, University and Bellevue Hospital Medical College.

3 Eschle, Schmidt's Jahrbücher, 1896, ccl.
1 For a discussion of this see Hensel. Inaug. Dissert. Königsberg.
5 Fränkel. Die Arzneimittel Synthese, p. 73.

2 Kuprianow, Centralbl. f. Bakter., 1894, xv.
3 Eschle, Schmidt's Jahrbücher, 1896, ccl.
4 Eschle, loc. cit.
5 Fränkel. Die Arzneimittel Synthese, p. 73.

The substance we have examined, guaiamol,* is guaiacol ammonium sulphate, $C_6H_3\begin{cases}OH\\OCH_3\\SO_2NH_4\end{cases}$ It differs from thiocol only in having a NH_4 group in place of the K atom, a difference which would in nowise affect the action of the body. It exists in crystalline form, is freely soluble in water and is devoid of irritant properties.

We have determined first whether the substance is antiseptic and whether it is split up by the pancreatic ferments, and secondly, whether it is broken up in the body after absorption, with the liberation of guaiacol. The second point would be shown by changes in the sulphur compounds in the urine.

As we were completing our experiments a paper by Knapp and Suter[6] appeared in which experiments on thiocol were described. The experiments were carried out in a manner very similar to ours, and the conclusions reached were that thiocol is not an antiseptic, is not broken up in the body, and hence is of no value as a substitute for guaiacol.

In testing the antiseptic value of guaiamol, finely ground pancreas was placed in a flask, covered with a 10 per cent. guaiacol solution, and the mixture placed in an incubator at 37° C. A control experiment was carried on at the same time, a one per cent. solution of guaiacol being used in place of the 10 per cent. guaiamol solution. The two flasks were kept in the incubator for two days. At the end of that time the contents of the guaiacol or control flask were perfectly sweet, with no trace of decomposition. The contents of the guaiamol flask, on the other hand, had undergone decided putrefaction. Tests for free guaiacol in this flask were negative. Guaiamol is not an antiseptic then, nor is it split up by the pancreatic ferments.

In determining whether or not guaiamol is broken up in the body after absorption, the experiment was carried out on a medium-sized bitch in the following manner. The experiment lasted ten days and was divided into three periods: One a control period of four days, followed by four days of guaiamol treatment, during which the animal received daily 3 grams guaiamol subtaneously and a final period of two days after guaiamol medication had been stopped. The dog was placed on a fixed diet throughout the experiment, receiving each day 15 grams dry casein, 100 grams crackers, and 30 grams lard. Water was given *ad libitum*. The daily period ran from 9 A.M to 9 A.M., at which time the animal was catheterized and the bladder carefully washed. The urine collected during the twenty-four hours was mixed with the bladder washings and the volume made up to 1,000 c.c. In each day's urine were estimated the total sulphur, inorganic sulphates and ethereal sulphates, these being calculated in terms of SO_3. The method of determination is very briefly as follows: For the total sulphur, 75 c.c. of the diluted urine were evaporated to dryness in a silver crucible over the water bath, and the residue fused with NaOH and KNO_3. SO_3 determinations were made in the ordinary way by precipitating with $BaCl_2$ and weighing the $BaSO_4$. For the inorganic sulphates 100 c.c. of the diluted urine were precipitated with $BaCl_2$ and the $BaSO_4$ weighed. For the ethereal sulphates 100 c.c. of diluted urine, after removal of the inorganic sulphates, were boiled with HCl and then treated with $BaCl_2$. The determinations were all made in duplicate.

The difference between the total sulphur and the sum of the inorganic and etheral sulphates, all expressed in terms of SO_3, indicates the "neutral" sulphur, together with oxidized sulphur of a type which does not allow of being split off as H_2SO_4 on boiling with hydrochloric acid. In the ethereal sulphates the sulphur is attached to a carbon atom through an oxygen atom, whereas in guaiamol the sulphur atom is linked directly to a carbon. Hydrochloric acid splits off the sulphur in the former condition, but not when it exists in the latter form. Unchanged guaiamol will therefore appear in the neutral sulphur fraction of the urine. If it is split in the organism, with a liberation of guaiacol, the ethereal sulphate fraction will undergo an increase, corresponding to about 50 per cent. of the amount of liberated guaiacol.

The protocol of the experiment is as follows:

Day.	Volume of urine in c.c.	Total Sulphur.	Inorganic Sulphates.	Ethereal Sulphates.	Neutral Sulphur.		
1	235	0.600	0.324	0.021	0.255		
2	195	0.513	0.290	0.022	0.201		
3	310	0.620	0.320	0.016	0.284		
4	240	0.666	0.400	0.023	0.243	3 grams	guaiamol.
5	230	1.800	0.422	0.030	1.348	"	"
6	300	1.705	0.401	0.032	1.272	"	"
7	210	1.589	0.404	0.039	1.146	"	"
8	215	1.548	0.432	0.038	1.078		
9	260	0.711	0.391	0.035	0.285		
10	240	0.537	0.332	0.026	0.179		

AVERAGES.

Fore period	0.600	0.333	0.021	0.241
Guaiamol period.....	1.660	0.415	0.035	1.211
After period	0.624	0.361	0.030	0.232

As the figures indicate, the neutral sulphur fraction was largely increased on the days during which guaiamol was administered. This increase, calculated in terms of SO_3, and taking daily averages, was equivalent to 0.970 grams SO_3. Since the 3 grams guaiamol taken contained 1.085 grams SO_3 the conclusion must be reached that 89.4 per cent. of the substance was excreted unchanged. The slight rise in the daily amount of ethereal sulphate indicates that a certain quantity of guaiamol was decom-

* Guaiamol, which we have taken as a type of sulphonated guaiacol compound, was kindly furnished us by Schieffelin & Co. In justice to this firm it may be stated that this drug has never been placed on the market.

6 Knapp and Suter, Arch. f. exp. Path. und Pharmakol., Bd. 50, 1903.

posed in the body, since guaiacol, as above stated, is execreted in the form of a combined sulphate. The daily average increase in the ethereal sulphates amounts to only 0.014 grams SO_3, which is equivalent to 0.0387 grams guaiacol or only 1.29 per cent. of the quantity ingested.

There is to be noted in the table a marked decrease in the daily excretion of neutral sulphur after the first guaiamol day, a decrease which runs parallel with the total sulphur output. Since the ethereal sulphates do not show a corresponding increase, the explanation cannot be found in the assumption that the organism is gradually taking on the power to decompose guaiamol. The decrease must be ascribed to a lessened output of those compounds usually classed as neutral sulphur, namely ethyl sulphur, oxyproteic acids, cystin, taurin, etc., but why this occurs we are at a loss to say.

Our results are, therefore, in complete accord with those of Knapp and Suter as concerns thiocol. By the most liberal estimate 10 per cent., but most probably only one to two per cent. of the guaiamol ingested undergoes decomposition in the organism after absorption.

The conclusions reached are as follows: (1) Guaiamol is not an antiseptic; (2) it is not broken up by the pancreatic juice; (3) after absorption it is decomposed to such a slight extent that no action due to guaiacol liberated could occur.

These results serve to emphasize the fact that all attempts to increase the solubility of drugs by sulphonation are valueless from a therapeutic standpoint.

ADDRESSES.

THE MEN WE LOST.[1]

BY S. J. MELTZER, M.D.,
OF NEW YORK.

THE remarks, which custom requires of me to make at this occasion, will be confined, as at last year's meeting, to matters pertaining to the affairs of the Association. Last year your president advocated a widening of the scope of the Association, and recommended the appointment of a committee which should formulate appropriate changes in the constitution. The recommendation being approved by a vote of the members, the president named seven members to serve on that committee which was termed Committee on Reorganization. After due deliberation and consultation with the members of the council, the committee recommends changes in the constitution which in the first place would enable the association to include in its membership scientific investigators as well as surgeons who do special work in gastro-enterology; and in the second place would make an irreproachable moral standing an indispensable requisite for acquiring and retaining membership in this Association. The council recommends the adoption of these changes. The report of the committee will be read to you at the executive meeting. According to the constitution, these changes could not be voted upon until next year. However, a part of the desired aims could be already realized the coming year if the president should be empowered to continue the present Committee on Reorganization for the purpose of studying the men who appear to be very desirable as members of our Association and to invite them to join our ranks. The present occupant of the chair would be very gratified if he could thus contribute to the elevation of the scope and standard of this Association.

In the address of last year I was happy to be able to point out that we never met yet with the flag at half mast. We still have reason to be thankful to the fates for the integrity of the ranks of our active members. I have, however, to record with profound regret that in the course of the past year one of our foreign members, a master mind in our science, was taken from us. I refer to Franz Riegel, who, through some inexplicable error, has been classed only among the corresponding members of this Association. Furthermore, in looking over the list of our foreign members, which originally comprised seven celebrated names, I found that nearly one-half of them have already been taken from us by death. Besides Riegel, fate has taken from us Adolph Kussmaul and Samuel Fenwick. There is no record that at the meeting of 1903 due notice was taken of these bereavements which occurred in 1902. It was an oversight which it is not now too late to correct. While it is within the scope of my duties to speak to-day of the life of Franz Riegel, I am sure the Association will grant me the privilege to speak also of the lives and works of the other great men who honored us during their life by accepting the membership of our Association.

Adolf Kussmaul was the first of our losses. He died May 28, 1902, at the age of eighty, of heart failure, half an hour after he experienced some stenocardiac symptoms for the first time. He was born in Graben, near Carlsruhe, Germany, as the son of a country practitioner from whom he inherited the faculties of a naturalist and the love for medicine. After completing his medical studies in Heidelberg and taking some post-graduate studies in Prague and Vienna, he served for a short time as military surgeon in the Baden army and then settled in Kadern, a small town in the picturesque region of the Black Forest, where he carried on a successful practice for four years until he became incapacitated for many months by an attack of paraplegia of obscure origin. After recovering from this disease he decided to begin life anew and to prepare himself for an academic career. With his meager savings as a base he pursued the study of the scientific branches of medicine in Würzburg. In 1856 he was admitted to the University of

[1] President's Address, delivered at the opening of the eighth annual meeting of the American Gastro-Enterological Association, held at the Academy of Medicine, New York, April 24 and 25, 1905.

Heidelberg as Privat-Docent and in the following year he was appointed professor extraordinarius. In 1859 he was called to the regular chair of medicine in Erlangen; in 1864 he went to the University of Freiburg and in 1876 he was called to the University of Strassburg. In 1888 he retired from his academic positions and spent the remainder of his life in his beloved Heidelberg.

Kussmaul was undoubtedly one of the greatest clinicans, one of the most accomplished physicians of his age. He was a harmonious personality; in him the great faculties of the naturalist and the physician were coupled with kindness and simplicity of heart, and in him were united the common sense of the practical man with a fine poetical spirit flavored with a delicious humor. He was admired and loved. His scientific contributions are too numerous to be mentioned at length here. They extend into nearly every department of medicine. Many of his contributions exerted a deep influence upon the science and practice of medicine, and some became common property to such an extent that their originator is already forgotten. Some of his writings are real classics. I mention only the essay on the Psychology of the Newborn or the important essay on the Disorders of Speech. He was a pioneer in many domains of medicine. It is hardly known that he was the first one to describe osteomyelitis, to attempt the construction of an ophthalmoscope, or to develop gastro- and esophagoscopy, to establish the relation between anemia and convulsions; the first one to point out the importance of coryza for the suckling baby, to describe bulbar paralysis, to describe and analyze diabetic coma, to introduce the method of thoracocentesis, the first one to diagnose *intra vitam* embolism of the mesenteric artery and to describe the diagnostic significance of the pulsus paradoxus. There are a good many more important contributions to general medicine which we cannot mention here. But we have yet to speak of his great service to gastro-enterology. He was the first to employ a stomach tube, and by this step he undoubtedly gave the first and most important impulse to the modern development of our knowledge of the diseases of the stomach. His articles on the treatment of the dilatation of the stomach and on the peristaltic unrest of the stomach are classical contributions to our subject. Many important additions to our knowledge have been published by his assistants and pupils under his direct influence and active cooperation. Of those which interest us here I shall mention only the following few: On the presence and absence of hydrochloric acid in gastric juice by Van den Velden; the classical prize essay by Poensgen on the motor activities of the human stomach; on the treatment of the ileus by washing the stomach, by Arnold Cahn; on the acids of the healthy and diseased stomach by Cahn and von Mehring. Kussmaul's last contributions to gastro-enterology were made from his retreat in Heidelberg while already over seventy; they are practical and of permanent value, namely, the treatment of gastric ulcer by large doses of bismuth, and the treatment of chronic constipation by enemata with large quantities of oil.

When already over seventy-five years he wrote his celebrated autobiography, Juvenile Recollections of an Old Practitioner, an inspiring, fascinating little book. Old age had not curtailed the usefulness of that great and lovable man. I shall finish with the statement that to my knowledge Kussmaul never attempted to write a textbook.

It might not be unprofitable to speak of Kussmaul as a practitioner and clinician. All his assistants and pupils could not praise enough his kindness and devotion to his patients. While he was an enthusiastic investigator, he never permitted the study of a case in a manner which could bring harm or discomfort to the patient. The patient was always first and science second, a high principle which should be burned into the minds of our generation of overproductive specialists. Kussmaul told his students he wished them to pass through a serious disease, it would help them to become good physicians, they would then understand what care, kindness and tenderness meant to a suffering patient. Kussmaul himself learned this lesson during his own sickness and did not forget it for half a century. He insisted that his students should learn the particulars of nursing, the making of a bed, the handling of a patient, the preparation of his food, etc. Above all he laid great stress upon the moral and mental influence of the physician upon his patient. He believed in making the patient at least hopeful and cheerful even if he could not be made well. Kussmaul was a great and good physician even if he did not believe in the more godly though less humane doctrine of Truth in Medicine. May the life of this great man be an inspiring example to the younger generation in this country.

Samuel Fenwick died December 11, 1902, at the age of eighty-one years, of heart failure, due to atheroma of the aortic valves. He was born in 1821 in Northumberland, England, of a family which played a conspicuous part in that country for seven centuries. He was compelled to study medicine on account of pecuniary losses which his father had sustained. At the age of fourteen he was apprenticed to the Royal Infirmary of Newcastle-on-Tyne, from which, after seven years, he graduated as M.R.C.S., England. In 1846 he obtained the title of M.D. from the University of St. Andrews. While he was still in the twenties he undertook original researches upon the process of digestion and absorption in lower animals, wrote a book on the chronic diseases of the throat and was appointed lecturer on pathological anatomy at the Durham School of Medicine. He moved later to Newcastle where he acquired a consulting practice said to

have extended over the whole of the north of England. In 1859 he was made honorary M.D. by the School of Medicine of Durham. In 1862 he moved to London where he acquired an extensive consulting practice which he carried on uninterruptedly to the very last days of his life. His private practice seems to have been confined essentially to the diseases of the stomach. In London Hospital, however, where he went through all grades until he became senior physician, he taught many branches of medicine, beginning with physiology. Fenwick was a prolific writer on many subjects. He wrote several text-books which passed through a number of editions. In the later years of his life, his writings were mostly on subjects of gastric diseases. He was probably among the first to write a book on the diseases of the stomach. It was in 1865 and the title reads: "Morbid States of the Stomach and Duodenum." The ninth edition of that book was revised by him fourteen days before his death. He was a man of dignified reserve. He led a retired home life, which was due, it is stated, to a very delicate stomach, a condition which might have been also the reason for his paying special attention to the morbid conditions of that organ.

Franz Riegel died August 26, 1904, at the age of sixty-one, of a malignant neoplasm of the lungs. He was born February 9, 1843, at Brückenau, and was the son of a physician. He studied medicine at Würzburg and after graduating there with highest honors, took a post-graduate course in Vienna under Oppolzer and Stricker. Returning to Würzburg he became assistant first to Bamberger and later to Gerhardt, both celebrated clinicians of their time. In 1871 Riegel became privat-docent at the university, where he lectured on experimental pathology. In 1874 he was appointed director of the City Hospital in Köln, whence he was called (1879) to the University of Giessen to the chair of medicine, which was first filled before him by such celebrated clinicians as Niemeyer and Seitz. The twenty-fifth anniversary of this appointment was celebrated last May by his many pupils, friends and admirers, his assistants and pupils dedicating to him a valuable and extensive Festschrift. He then commenced to show the distressing symptoms of his vicious malady, which, after a few months of suffering, took him away from us in the midst of his active, useful life.

Riegel was a very earnest character, a savant who knew no leisure and no amusement, but hard work and earnest studies which to the last days of his fruitful life he devoted to the science and practice of medicine. His publications are numerous and all very valuable. Differing from most of the distinguished clinicians of his time for whom pathological anatomy was the essential factor of their scientific productivity, all of Riegel's works bear a physiological stamp, his interest centered in functional problems of life, and many of his clinical observations were supplemented by thorough experimental studies. His biographers say that the foundation for this direction of mental activity was laid in Vienna by his contact with Stricker. While I do not doubt that Stricker exercised a certain influence upon the future scientific direction of Riegel, I personally believe that the inclination for the study of functional rather than morphological problems is an inherent one with the individual. It was, so to say, congenital with Riegel. The subject of his thesis, which was written before he met Stricker, was already of a physiological character. It dealt with the respiratory movements in health and disease. Later he returned again and again to the studies of the respiratory organs, to stethoscopy, to the nature of asthma and its treatment, etc. What a fate to die of a malignant disease of an organ to the study of which he had paid so much attention! Undoubtedly he must have made his own diagnosis. Other extensive studies were devoted to the vasomotor influences, to the arterial pulse, to the venous pulse, to the contractions of the heart, to the conditions of the heart and blood pressure in nephritis, to the effects of jaborandi, caffeine, atropine and other drugs. A good part of his work, at least during the last two decades of his life, was devoted to the diseases of the stomach in which field he undoubtedly occupied the first rank. It would nearly be writing a detailed history of the present state of knowledge of gastric disease, were I to attempt to count up the work which Riegel and his able assistants have done in this field. By the present almost exclusive use of a test breakfast, it is practically forgotten that the importance of this method lies in the test meal and that this was first used and introduced by Riegel in 1879. The last work coming from the pen of Riegel was devoted to a discussion of the distinction between hyperacidity and hypersecretion. It is of psychological moment to know that Riegel himself often suffered from gastralgia accompanied by hypersecretion.

By the undertaking of Nothnagel to publish classical monographs on all chapters of medicine by leading clinicians, Riegel was induced to treat of the diseases of the stomach; it resulted in the production of a masterpiece. In the last months of his life he was engaged in the preparation of a second edition of this classical book. It was one of his great worries that he was unable to finish the revision of it. Let us hope that one of his many able assistants will be able to complete it in the spirit of the dead master.

Contribution to the Question of Thymus Hypertrophy.—The possibility of wrongly mistaking other conditions for hypertrophy of the thymus, merely upon the basis of the results of percussion alone, is firmly emphasized by G. TADA (*Jahrbuch f. Kinderheil*, Jan. 2, 1005). Internal and parasternal dulness, particularly to the left of the sternum, if unaccompanied by any definite symptoms, does not warrant the diagnosis of enlargement of the thymus, but should rather point to tuberculosis of the mediastinal lymph nodes.

THE FUTURE OF THE LARYNGOSCOPE AND THE STUDY OF LARYNGOLOGY.[1]

BY JOHN NOLAND MACKENZIE, M.D.,
OF BALTIMORE, MD.;
CLINICAL PROFESSOR OF LARYNGOLOGY AND RHINOLOGY IN THE JOHNS HOPKINS UNIVERSITY, AND LARYNGOLOGIST TO THE JOHNS HOPKINS HOSPITAL.

We meet to-night to celebrate the making of an epoch. With simple, yet imposing ceremonial, the laryngologists of the world are to-day doing the man who made their handicraft possible deserved and conspicuous honor. Among other testimonials of their respectful and distinguished consideration and high regard, they have hung on the walls of the Laryngological Society of London—the city of his adoption—his life-like portrait, from the brush of a great artist, as a token of their admiration and affection—in loving and enduring memorial.

Surrounded by his British colleagues and by representatives from other lands, in the quiet dignity befitting such an occasion, he is to receive this graceful tribute to his worth and is to be brought face to face with the crowning glory of an hundred years.

He has seen his invention buried in an almost unfrequented grave—he has witnessed its resurrection, its desperate struggle for even recognition, its hard-fought battle for supremacy. And he has seen, too, the stirring events which have led up to its final triumph pass him by in orderly and stately procession; and standing on the threshold of another century of life, it has been vouchsafed to him to see through the vista of the years to come, the realization of his fondest dreams.

In this hour, when in the chief cities of the two great English-speaking empires, the laryngology of the New World unites with the laryngology of the Old to do honor to Manuel Garcia, it has occurred to me, in replying to the courteous and flattering invitation of the President and members of this body to be with you this evening, that it might not be inappropriate to ask what the future has in store for the application of the discovery which has linked his name so inseparably to the history of our art. It seems, too, that the occasion is a proper one to enter an earnest plea for the more perfect study of laryngology as a part of the general scheme of medical education.

The story of the past of the laryngoscope has been so often and, especially on this occasion, so eloquently told, that he would indeed be rash who ventured any variation on this theme. What most concerns us now is the question what is to be the final outcome of the early labors of him whose centenary we signalize with jubilee and memorial to-day? What will be their ultimate reward?

The future of the laryngoscope can, I think, be best discerned by following the history and development of the undergraduate study of laryngology, for it is chiefly along this line that the art of laryngoscopy is destined to come into common use. The general introduction of laryngology as a compulsory part of the curriculum of the medical college is the coming event which has already cast its shadow before.

The study of laryngology has been greatly neglected, until very recent years, in the medical schools of this country and Europe. It has either been omitted from the schedule of studies entirely or, in many colleges, at least, it is taught in a superficial or perfunctory sort of way that inspires neither faith in the instructor nor interest in the student.

Although the catalogue often tells in glowing terms of a course in laryngology, such a course will be found in practice to be like the "Co." in "A Tetterby & Co." a mere poetic abstraction, altogether baseless and impersonal. In very few schools has it been taken at all seriously, while it was not until the year 1893, and then in only one institution, that it was made an obligatory study and a requisite for the degree of Doctor of Medicine. Nor has the position assigned to laryngology in the university been at all commensurate with its importance, and yet of all the pure specialties, that is to say, those branches requiring special technic and special instruments and methods of precision, it is the most generally useful to the diagnostician and general practitioner. The time has gone by when it is necessary to press the claim of laryngology to recognition of the highest rank. We no longer apologize—we demand. There was a time, now very remote, when laryngology meant little more than the art of laryngoscopy, and it was often prostituted to inferior use. It is no longer a simple method of examination and demonstration, but an enduring, vital force in medical progress, which lives and breathes and has its being within the very heart of inner medicine itself. It is no longer the Canaan of the quack, but a fair land of promise for the highest order of research. It should therefore hold high place in the curriculum of the college and university. It should have a separate, thoroughly equipped department and a full professorship. While I do not wish to overestimate the relative value of laryngology in a scheme of medical education, and while I am fully conscious of the present congested condition of the schedule and the future necessity of a large number of elective studies, I am of the opinion that, in view of its very great importance, it should remain as it is in the curriculum of the Johns Hopkins University—an obligatory study. If laryngology and ophthalmology should ever disappear from the list of compulsory studies, they should be the very last to go. Their exile from a curriculum in which they have been once established would be, not an act of progress, but of retrogression.

The time is fast approaching when a knowledge of the use of the laryngoscope will be as

[1] Address before the New York Academy of Medicine, March 17, 1905, at a meeting to commemorate the one hundredth birthday of Manuel Garcia.

necessary to the equipment of the advanced physician as is now a knowledge of the physical examination of the chest. Not only the schools, but the public will demand it. It is impossible to exaggerate its importance to the medical and surgical diagnostician in the early detection of disease, not only in the respiratory organs themselves, but, of equal, if not superior importance, in neighboring and remote organs of the body. Long in advance of the appearance of classical signs and symptoms of disease in other organs it often points the way to grave disorder.

Time was, not very long ago, when physical diagnosis of the chest was not required of the medical undergraduate and when the special knowledge of the art was supposed to be, and practically was, confined to the few. Now every practitioner of medicine knows, or thinks he knows, it all. The laryngoscope will go, indeed is already going, the way of the stethoscope and become the common property of the general practitioner of medicine. It will be an absolute necessity in that great specialty, which next to surgery, is the highest of them all—internal medicine. The time is quickly coming when the art of laryngology will be linked to general medicine as the art of physical diagnosis of the chest has become its inseparable associate. How it must rejoice the heart of the old man across the seas to feel that a knowledge of the working of his invention, which together with its first results was consigned to obloquy and oblivion in the Transactions of the Royal Society, is, in some quarters at least, necessary to the acquisition of the medical diploma and is destined in time to come into universal use among medical men.

The great advance made by laryngology in recent years, the rapidly growing necessity of a knowledge of its special province in the elucidation of obscure conditions in other and remote organs of the body, the popularity of its study and the accordingly rapidly increasing number and far-reaching geographical distribution of its votaries, are only some of the causes that have led to the increasing general knowledge of the art of laryngoscopy. But perhaps the most significant and convincing phase of the question is to be found in the slow but certain progress of laryngology to a commanding place in undergraduate instruction. It is in the study of laryngology in the undergraduate curriculum that will be found the compelling force and resistless undercurrent that is to carry the laryngoscope to its permanent abiding place beside the stethoscope and other absolutely necessary instruments of precision in the outfit of the medical diagnostician.

The proper time to lay the foundation for the educated laryngologist is in early life, in his early studies, in his undergraduate days; for it is at this period of his medical training that he is in the best position to acquire that fundamental knowledge and, what is of more importance, that breadth of mind which is so essential to his future development. At this receptive period of the development of his mind he can best recognize the limitations of each special branch of medicine and can best be taught to generalize profoundly not in one but in all departments of medical thought. It is at this stage of his career that it is impossible for him to cut loose from the other departments of medicine. The growth of his special studies goes on *pari passu* with his advance in other lines of work and he is brought in daily contact with disease in other organs of the body. He learns at the outset that no department of medicine is isolated and independent, but that they are all mutually dependent and coordinate. And if he is made of the proper stuff, this fundamental lesson and illuminating first impression will follow him in his special work in after-life as an inspiration and a guiding star.

Let us now turn to the development of the study of laryngology in our medical schools and in doing so you will forgive me if for a moment my remarks become personal and reminiscent. I may perhaps best illustrate the different phases of its development by giving a chapter from my own experience.

Twenty-four years ago, when I was on the working staff of the then largest laryngological clinic in London, the Hospital in Golden Square, there was no place in that vast metropolis where the student could get systematic instruction in special work. None of the colleges or hospitals gave lectures on laryngology—nowhere was it requisite for the degree. All strangers in London interested in the specialty, came to Golden Square, attracted there by the personality of Morell Mackenzie, then at the zenith of his popularity and power. With all the enormous material at our command, there was practically no instruction given, except in the way of hasty demonstration of cases; and if the student or visitor learned anything, it was through close personal observation on his part and not through any gigantic effort to impart knowledge on the part of the medical staff. With one or two exceptions the latter directed their attention almost solely to the larynx and thyroid gland, and the nasal passages were only examined when in quest of a polypus or when the attention was irresistibly attracted to these organs by the horrible stench of an ozena. The nasal cavities were practically neglected and the only apparatus in the hospital for the treatment of their diseases consisted of a pair of forceps for the removal of nasal polypi, and a handball atomizer with a detergent solution for the treatment of ozena or any other miscellaneous disease of the nose that might irresistibly obtrude itself upon the recognition of the medical staff. When later I studied on the Continent, I found a like condition of affairs. In no school was laryngology taught to undergraduates, and the only means of acquiring special knowledge of the subject were the imperfect courses on diseases of the larynx, given by the professors and their assistants. There

was no special course in rhinology, which subject, as in England, was left entirely alone. I returned to my own country to find the same neglect of the study of laryngology that I had found in England and on the Continent.

In 1887 I was called to the chair of laryngology and rhinology in one of the oldest medical schools in America. The annual catalogue and circular told in flamboyant terms of a course on laryngology which at once set the mind to wondering how it would be possible for a student to escape from the institution without absorbing all that was coming and all that had gone before in that imperial domain. On my induction into office, I cast about me for the paraphernalia which should accompany my lofty position. I found in a dark closet or rather hole which led under the seats in the amphitheater where the lectures and clinics were given, a dilapidated lamp whose structure and general appearance of antiquity suggested the possibility that it might have been originally trimmed by some spirit in the age of fable, a broken laryngeal mirror, from whose back the quicksilver had long since departed and a cardboard diagram, colored blood red, like an eczema, which was supposed to represent the laryngeal image, but looked more like the Baltimore fire. These crude implements of the laryngoscopic art I found—and a tradition. According to this tradition my predecessor in office was accustomed to meet his class at the opening of each session, and, after a few introductory remarks, disappeared with a patient into the closet under the seats and closed its door. There was a period of breathless silence and intense expectation on the part of the students, during which time all manner of strange noises were heard in the darkness beneath them. These finally ceased, and the professor reappeared, his face radiant with satisfaction, and advancing toward the class, with the laryngeal mirror held aloft, triumphantly exclaimed: "Gentleman, I have seen the vocal cords!" According to the same tradition, that was all the laryngology the class got during the session.

The quarters assigned to me in the dispensary, where the patients were examined, consisted of a little compartment or "box" from which all sunlight and fresh air were carefully excluded, and in the foul atmosphere of which it is probable that two of my assistants subsequently contracted tuberculosis. It was thus thoroughly equipped and under such cheerful conditions that, without either moral or financial support on the part of the executive branch of the institution, I began the task of teaching practical laryngology to undergraduate students. Fortunately, I had good assistants, with whose aid I soon built up an excellent clinic, so that we were enabled to give the men during the session demonstrations of most of the diseases of the upper air-tract and all the common operations on the nose and throat. I gave the lectures and clinics, and my assistants superintended the instruction of the students in the dispensary. Although attendance in the department of laryngology was not compulsory, and although no examinatoin was ever held in this branch, the course was largely attended and many became so much interested in the subject that they subsequently took it up as a specialty.

This was practically the condition of affairs in the undergraduate study of laryngology, when in 1889, the Johns Hopkins Hospital threw open its doors, and when, several years later (1893), the medical school in connection with it and the university was formally opened. The Johns Hopkins University deserves the credit of being the first institution of learning, either in this country or beyond the seas, to give to laryngology the prominence which its place in medical education demands. It was the first to make it an obligatory study in the curriculum, and to make an examination in this branch a requirement for the degree of Doctor of Medicine. This was one step, and in consideration of the former neglect of the subject, a prodigious one, to place laryngology where it properly belongs and to give it the position and prestige to which it is justly entitled. It marks, therefore, an important era in the evolution of the undergraduate study of laryngology. As a matter of historical interest, and in response to many inquiries on the subject from teachers of laryngology, in various parts of the country (which simply echo the forward march of progress in this department that is being sounded in other serious colleges throughout the land), although I have done so before, I think I may be pardoned if I again ask attention to the method of teaching the specialty which has been adopted in this institution. I shall content myself with simply giving a mere outline of the work, and shall not enter into matters of detail.

The time required for the degree of Doctor of Medicine is four years, of nine months each. The requirements for entrance to the medical school are rigid, only those being admitted who give evidence of having had a liberal education as indicated by a collegiate degree in arts or science, including an acquaintance with Latin, a reading knowledge of French and German, and adequate training in physics, chemistry and biology. The first two years are devoted mainly to practical work of all kinds in the laboratories of anatomy, physiology, physiological chemistry, pharmacology and toxicology, pathology and bacteriology. During the last two years much of the student's time is spent in practical work in the wards, laboratories and dispensary. It is not until the fourth year that the class enters the special departments. It is my intention to give a course on laryngology in the third year, so that when the student enters his graduating or fourth year course, he may be at least familiar with the use of the mirror. I mention these facts simply to show that, when the student reaches me, he is quite thoroughly trained, not only in the use of

his brain, but also in the use of his hands. By constant practical work for three years, he has acquired an amount of manual dexterity which enables him to master the art of laryngoscopy with relative ease.

The graduating class is divided into sections—each section (of the fourth-year class) attends for one and one-half hours daily during two months, the laryngological and rhinological department, where they receive practical instruction from my assistants and myself. After preliminary drilling in the use of the laryngoscope and other technical procedures, and in diagnosis, the student assumes the work of clinical assistant. He is given pathological material for examination and diagnosis, and is encouraged to report cases and read papers before the Hospital Medical Society, to look up the literature of interesting subjects connected with laryngology, to observe for himself and, if he has time, to do original work. He is taught to investigate and to inquire, and I may say just here that it often requires a very high order of human ingenuity to construct an evasive answer to some of the conundrums with which I am frequently assailed. He takes his first lesson on the human subject—gets his first impression from Nature. I formerly used models; but some one stole them and I am glad they are gone.

By the above method, the teacher comes into direct personal contact with each member of the class, and is enabled to measure the mental status and personal equation of the individual. In no other way can laryngology be properly taught. It is hard work, but it pays in the results which are accomplished. Laryngology can not be taught by text-book or lecture. It must be taught over the shoulder of the instructor, and on the part of the student, must be acquired by direct contact with, and personal observation on, the living subject.

Each student, by this method, becomes an individual responsibility—a special care. And just here let me observe that the day of operating before crowded benches is no more. The amphitheatre with its old-fashioned surgical clinic will soon become an anachronism. Tier after tier of seats in an operating room is simply a waste of space which could be utilized in a far more profitable manner. No more play to the gallery—no more spectacular performance! Of all the special studies, laryngology is the most difficult and troublesome to teach. It involves hard, painstaking work and patience, not only on the part of the teacher, but also on the part of the student. Each student, as I have said before, is practically a special pupil and must be individually instructed; and to that end the chief of the department should have a corps of trained assistants whose work he may complement and supervise.

While the didactic lecture is fast becoming an anachronism, I do not believe that the day of its usefulness is completely gone. I give a systematic course of weekly lectures to the entire class, which are supplemented by pathological and clinical demonstrations, on the anatomy, physiology and commoner diseases of the upper air-passages and their relations to morbid processes in other parts of the body. In this course especial attention is paid to diagnosis. The object of these lectures is two-fold; (1) to give in a concentrated form and in the shortest possible time information which could not be acquired except by great additional labor on the part of the student, and (2) to avoid endless repetition in the section room. One year I abandoned the didactic lectures altogether and gave up the time to practical work alone; but the change was not satisfactory for many reasons and I was obliged, therefore, to return to this method of instruction.

Among the many questions that are asked me is the justly serious one concerning examinations. The question of the value of examinations is a very important one and one which is destined soon to be pressed to final settlement. While I cannot go as far as my gifted friend and colleague, Professor Mall, who is of the opinion that it would be well to separate them from the course of instruction entirely, I must confess that I am very much in sympathy with him in the main points of his contention. But until a more rational and exact method of accomplishing the same results be devised, I am afraid the examination must remain as a necessary evil. It is often a farce. One of the best examination papers I ever received was from a student who, on account of serious illness, was compelled to absent himself from the very lectures on which the class was being examined. He had used the notes of a fellow student and came back at me with almost my own words. In the university in which I received my first medical degree, instruction, except in the department of anatomy, which was practically and ably taught, was entirely by didactic lectures. We sat all day in the lecture room taking notes, and spent the entire evening "cramming" them for the next recitation. We never saw a medical case. Once during the session, the professor of surgery brought in the colored janitor, stripped him and bandaged his legs and arms. This was our only course in practical surgery. Those were the good old days when, as Mall says, the students "heard much, saw little and did nothing." When the day of examination arrived I knew my text and note books from cover to cover, and could locate with unerring accuracy any required item of information to the page and to the line. My memory was so saturated with medical lore that it took me some years after I left college to forget it. I was invincible in the examination room, but helpless at the bedside.

The best examination is the observation of the student in his daily work and the resulting estimate of his personal equation. During the first two years I gave an oral examination at the end

of the term, carrying each student over the entire field covered by the lectures, but, as the size of the class increased, this had to be abandoned, and I gave a single written examination of which the following, which was my first, is an example:

1. Give the physiology of the nasal and accessory cavities.

2. General symptoms and diagnostic signs of suppuration in the nasal accessory cavities—diagnosis of pus in the antrum maxillare.

3. Early laryngoscopic diagnosis of tuberculosis and cancer; characteristics of syphilitic, cancerous and tuberculous ulceration in the upper air-passages.

4. Chief causes, symptoms and laryngoscopic signs of double, complete abductor paralysis.

5. Nature and diagnosis of so-called nasal reflex neuroses.

Now, instead of the written examination of the entire class at the end of the session, each group of students is given a thoroughly practical one at the termination of its section work and this examination is final.

Each student who graduates from the school must be familiar with the use of the laryngoscope and be able to diagnosticate typical cases of the commoner diseases of the upper air tract. He is marked as in the other departments and the examination affects his standing in the class and operates for or against his chances for hospital positions after graduation. In other words, for the first time in the history of medical education this branch of study has been taken absolutely seriously.

This, in brief, is a simple outline of the way in which laryngology is taught in the Johns Hopkins Medical School. I am fully aware of the imperfections of the method; but everything must have a beginning, and time and further experience will doubtless make it more perfect. In the classes under my care it has so far been very successful. The net result is that when the student graduates he has made a very fair groundwork on which to base, in the future, if he will, a more elaborate study of the specialty.

One of the most encouraging signs of the times is the largely increased amount of space given to laryngology in some of the leading general hospitals of the world. Not to mention others, this is notably the case in such institutions as the rehabilitated London Hospital and the Massachusetts General Hospital in Boston, where entire suites of rooms are devoted to this special department and where the most excellent work is being done. Princely apartments and imposing apparatus, however, count for nothing in the absence of the proper atmosphere to breathe and the proper spirit to direct. Well-directed effort in serious environment can accomplish wonders even in scant quarters and with poor equipment—without them, both material and opportunity go to utter waste. The special department should be (as it is in the Johns Hopkins University), a part and parcel of the organic whole and indestructible trinity of University, Hospital and Medical School, and this leads me to say that the proper place for a special hospital, particularly if it is to be dedicated to teaching, is in connection with a large general hospital, of which it should be, if possible, an integral part, inseparable from its machinery and moving in sympathy and unison with its other departments. For, apart from the obvious convenience and salvation of time to the student, it fosters a more liberal spirit and diverts him from the groove to which a too narrow specialization often acts as a centripetal force. Under these conditions, the laryngology of the future will best be taught. The student in this way is made to see at every turn the relation of his special study to other special branches and general medicine.

No hospital, general or special, ever completely fulfills its mission until it becomes a center of teaching, a factor in education, a means for the dissemination of knowledge.

The instructor will fall far short of his duty if he does not make the student forever bear in mind that laryngology is an inseparable part of general medicine—that the pathology of nasal and laryngeal diseases is not an isolated pathology; that the appearance of diseases in the upper air-tract is governed by the laws that condition the development and course of disease in general, and that the rational interpretation of these affections presuppose therefore the application of general pathological principles to the peculiar conditions which the anatomical and physiological functions of the structures involve. Above all, he should remember that peculiarity of structure is not anatomical isolation; he should remember the correlation of organ and organ, the sympathy of tissue and tissue which make up the perfect physiological life of man. In looking upon the subject from the high vantage ground of general pathology and laws of health, the student is in a better position to apprehend the rôle which external and internal influences play in the evolution of diseases of the respiratory apparatus, than if he viewed the subject from the level of a narrow specialism or from the standpoint of the mere empiric.

Laryngology should not be studied apart but kept in constant and closest contact with all the other departments of the university. Let there be more fraternity among the different specialties—more cooperation. If special workers in the different departments of medicine would, instead of holding aloof from each other, combine the special knowledge they possess in a common endeavor to elucidate the difficult problems which daily confront them, the hostile cry of ignorant criticism, which is so often directed against them, would be forever silenced by their discoveries for the common weal.

What effect will the increasing general knowledge of laryngological technic have upon the future practice of the specialty?

In some ways, and for obvious reasons, it will mean the passing of many. It will mean, let us hope, the relegation to the rear of that unfortunately numerically large element in our midst whose chief claim to special knowledge resides in the possession of the necessary apparatus which goes to make up the armamentarium of a worker in this field and whose highest conception of their calling is the "method of the nickel in the slot." But in other ways, as for example, by exacting more rigid requirements in laryngological education and by elevating it to a higher plane, it will doubtless redound to its everlasting good.

We shall soon reach a point where we shall be at the parting of the ways. On the one hand stretches out the broad highway that is easily trod by the superficial, the careless, the ignorant. On the other hand the narrow pathway, beset with obstacles which can only be conquered by him who, after a broad and liberal general medical education, bends his energies to constructive work and sets his face in the direction of high ideals.

The fate and fortune of laryngology is in the hands of the coming generation of teachers and students and it will depend upon their character whether the specialty will endure as a vital illuminating factor in medical progress, or whether, in the contest that is sure to come, it will go down before the might of the forces that are arrayed against it. If combat comes, let laryngology not idly wait to be obliterated or absorbed, but let her invade fresh territory of medical thought and with conquering arms extend the boundaries of her realm.

The laryngologist of the future will, as never before, be forced from intellectual solitude and isolation into the arena of the world of outside interest and activity. His voice will no longer cry aloud in the loneliness of special seclusion, but will be heard ringing through every avenue and by-way of the City of Medical Learning and resounding in its forum of debate.

For my own part, I have the utmost confidence in the future. There will be no retrogression, and in the not distant day when the art of laryngoscopy shall be looked upon, not as an accomplishment, but as a necessity, the fittest will survive. The time will come when the scientific laryngologist will be absolutely indispensable not only in the field of practical medicine, but in the realm of original research; and in the future evolution of our special knowledge it will come to pass that the waves that have been set in motion by the ripple caused by Garcia's invention will break on every shore of medical thought.

The study of laryngology will reach the full fruition of its hopes and aspirations by becoming the inspiration of a higher effort and a loftier ideal. It will teach the student not to contract but to broaden the horizon of his intellectual activities. It will make him understand that the laryngoscope is not merely a device for exploring certain hidden recesses of the body and for the demonstration of that which is already known; but an agent of positive power in future research,—a means of scientific expansion and exploration of the unknown. Let laryngology walk with becoming humility beside the great pioneer forces of human endeavor, aiding them, it may be at first, in an humble and unostentatious way, but still contributing to their progress through the trackless wilds of the land that is untrodden and unknown. Undaunted, undismayed, let them press forward, side by side, until the wilderness shall blossom as the rose and Nature's wild forest ring with the shout of their exultant discovery. When this ideal shall have been attained and this conception of our art is realized, then will the study of laryngology light the way for the triumphant march of scientific medical achievement, and the laryngoscope will become, more than ever before, an instrument of progress and power.

MEDICAL PROGRESS.

MEDICINE.

Chylous Ascites.—JAMES F. BELL (*Am. Med.*, May, 27, 1905) reports a case, in a man, age fifty-seven years, in which the amount of fluid withdrawn from October 1 to December 17 aggregated 106,370 c.c. There was little loss of strength or weight, the patient, at the last paracentesis, weighing but five pounds less than his normal average. The history would suggest a rupture of a large lymph duct, the thoracic duct, the receptaculum chyli, or a chylous cyst of the mesentery which has continued to discharge into the peritoneal cavity. The cause of the rupture is unaccounted for and no growth or neoplasm can be found in the abdomen. Dr. S. P. Beebe discusses the literature on analysis of chyle and reports the results obtained from examination of the fluid in this case.

Heroin Habit.—C. E. ATWOOD (*Med. Rec.*, June 3, 1905) notes the variety of cases of heroin addiction and reports one occurring in his practice. The patient was a married woman of nervous heredity to whom the drug had been given as an anodyne with the assurance that there was no danger of forming a habit. She continued to take the drug after the original indication for its use had disappeared, and when coming under treatment was giving herself four grains hypodermically in divided doses daily. A cure resulted from immediate withdrawal with symptomatic, sustaining, and eliminative treatment. The abstinence symptoms were, however, so severe that in a second case the author would resort rather to gradual withdrawal.

Quinquaud's Sign.—This has been described as almost invariably present in cases of chronic alcoholism, by the Frenchman, Quinquaud, and also by the German, Fürbringer. The phenomenon is elicited as follows: The patient places his spread fingers in the palm of the observer's hand. At first nothing unusual is felt, then there is imparted to the examining hand what appear to a series of faint shocks, as if the bones of the fingers were being knocked against each other and against the hand of the observer. These movements may vary from a gentle rubbing to a well-marked crepitation. The value of this sign as an indication of chronic alcoholism has been disputed by various observers, and HOFFMAN and MARX (*Berl. klin. Woch.*,

May 8, 1905) were therefore led to make a more thorough investigation. For this purpose they examined carefully 1,018 inmates of a German prison, who were divided into three classes according to the amount of alcohol consumed. The authors believe that the sign of great value and ascribe greater worth to it than other previous investigators. The absence of the sign, or its presence to a moderate degree, does not permit any absolute conclusions to be drawn either for or against alcoholism, at least as regards total abstinence or abuse, although the probability in favor of abstinence is as three to two. A marked grade of the phenomenon indicates excessive drinking with a probability of three to one. In looking into any possible relation between the ordinary tremor of the hands and this phenomenon, the authors found that there was apparently no connection between the two, one being found in numerous instances without the other. They believe that it is due to a peculiar muscular movement which produces vibrations of the bones in the long axis of the arm, the usual tremor being produced by a transverse motion. In the former case, individual groups of muscle fibers are involved, while in the latter, the whole muscle is concerned.

Observations Upon Amebas Infecting the Human Intestine, with a Description of Two Special, Entamœba Coli and Entamœba Dysenteriæ.—CHARLES F. CRAIG (*Am. Med.*, May 2, June 3, June 10, 1905) says that from his observations the following conclusions are warranted: (1) The intestine of man may be infected with two varieties of amebas, one pathogenic (*Entamœba dysenteriæ*), and the other non-pathogenic (*Entamœba coli*). (2) *Entamœba coli*, the non-pathogenic variety, is found in 65 per cent. of healthy individuals studied, and in 50 per cent. of individuals suffering from diseases other than dysentery, if a saline cathartic has been administered. (3) These organisms can be easily distinguished in both fresh and stained specimens. (4) They differ widely in their method of reproduction, and this is the most important method of distinguishing them. (5) *Entamœba dysenteriæ*, whether fed in milk or injected through the rectum, produces in kittens the typical lesions of amebic dysentery as observed in man. (6) In kittens, *Entamœba coli*, whether fed in milk or injected through the rectum, is absolutely harmless. (7) Neither feeding experiments nor rectal injections of fecal material or the bacteria occurring in such material produces any of the lesions of amebic dysentery, unless *Entamœba dysenteriæ* is present.

Sign of Value in Splenic and Hepatic Disease.—T. HORACE EVANS (*Am. Med.*, June 10, 1905) describes a method uniting both palpation and percussion. The abdominal walls should be relaxed, the lower extremities slightly flexed on the abdomen, and the leg on the thigh. The patient should open the mouth, breathing lightly through it. The physician gently plunges the fingers of one hand into the abdominal wall at the level of the anterior or lateral costal margin, and rather under the osseous curtain of the same. With the fingers of the other hand he firmly percusses over the supposed site of the organ, spleen or liver to be examined. Very delicate sense in the percussion hand will discover a variation of resistance, according to the state of the underlying organ, for the retaining hand secures the liver or spleen, as the case may be, between itself and the superior structure, the diaphragm. The more valuable result is the sensation derived from the parenchyma striking the retaining fingers, which are pressed into the abdominal wall. By a little experience the peculiar shades of consistency of the spleen or liver will make themselves readily perceptible. Any enlargement accompanied by softening or rigidity should be quickly distinguished. In case of typhoid this method is successful for the early diagnosis of splenic variations.

Pathologic Changes in Appendicitis.—E. MACD. STANTON (*Journal A. M. A.*, June 10), has studied the pathologic changes in the peritoneum in 185 cases of appendicitis, and of the appendix in 188 cases, all occurring in the Albany Hospital during the last six years, the notes and sections of which are on file in the Bender Laboratory. The relations existing between the character of the lesions and the stage of the disease were particularly studied in all. The histologic changes in appendices removed during the first few days of the disease were essentially similar and consisted in a severe diffuse inflammation, accompanied by focal areas of hemorrhage and necrosis. These latter may increase in extent during the first few days and give rise to macroscopic areas of gangrene or they may remain microscopic and be quickly repaired. The various anatomic varieties, gangrenous, perforative and ulcerative are due to the extent and distribution of these necroses. Evidences of repair are seen as early as the third day and the process is distinctly reparative in non-gangrenous cases by the fifth day. Even in cases with macroscopic evidences of gangrene, unless a later acute process is engrafted on the original one, the repair proceses predominate by the sixth or seventh day. Evidence of recurrence was observed in 10 or 15 per cent. of the cases after the first week. Repair is rapid during the second week of the attack; fibroblasts, newformed blood vessels and lymphocytes forming the principal features of the picture. The rapidity of repair depends largely on the amount of damage done and on the presence or absence of a periappendiceal exudate. By the end of the second week in most cases repair is so complete that new connective tissue may be the only evidence of previous inflammation, but in cases with extensive exudates, signs of active organization of the exudate itself are still in evidence. After the second week, except in cases with extensive periappendiceal lesions, the histologic changes are seen chiefly in the more fibrous nature of the new connective tissue which is still recognizable. In cases operated on a month or more after an acute attack, 78 per cent. were cases of chronic interstitial or obliterative appendicitis, frequently accompanied with adhesions. In 6 per cent. the appendices were apparently normal, and in 16 per cent. the changes were confined to the mucosa. In no instance were the changes confined to the mucosa in the cases examined during the first ten days of the attack. In this series of cases, purulent fluid was found outside of the appendix in 51 per cent. of the patients operated on from the third to the tenth days. After the tenth day the number of cases with abscesses steadily decreased while the number of those with adhesions and without pus rose correspondingly. This, Stanton thinks, was due to the less extensive peritoneal involvement in most of these late operated cases rather than to resolution by absorption. In a number of cases, however, the massive adhesions indicated the prior existence of extensive periappendiceal exudate. After the third day the exudates on the peritoneal surface contain highly vascular granulation tissue, and he thinks it probable that the high operative mortality between the third and tenth days may be in part due to absorption from the denuded granulating surfaces as well as to the extent of the peritonitis and the bad general condition of the patient.

Contribution to Hemophilia.—F. P. KINNICUTT (*Med. Rec.*, June 10, 1905) describes the history of a

hemophiliac whose symptoms began in infancy and persited with great severity until the time of his death, at the age of sixteen years. Frequent attacks of pain and swelling in the joints, including the smaller articulations, due to hemorrhage, and finally leading up to permanent structural changes, were a prominent feature of the case, and death was brought about by an intra-abdominal hemorrhage. The ancestry could be traced with much minuteness, but no evidence of heredity was found. The general nature of the disease is then discussed with especial reference to the occurrence of joint manifestations, and the pathology of such conditions. The author points out the possibility of confusing arthritis of this nature with that of tuberculous or rheumatoid type, and says that in joint affections bearing a resemblance to tuberculous disease in infancy and childhood, the family history, as well as the personal history, should be studied carefully previous to operative treatment. The tuberculin test in a hemophiliac is not without danger from injury by the needle. The question of treatment is considered at some length, the preference being given to the physiological styptics rather than to such agents as tannic acid, salts of the heavy metals, etc. The author speaks highly of the value of calcium chloride in this connection, and says that the present views of the therapeusis of hemophilia may be summarized as follows: (1) The internal administration of the lime salts, especially of the chloride of calcium, in doses of two grammes (30 grains) twice or thrice daily. Its continued use should be interrupted every two or three days by a period of twenty-four hours. (2) The application of solutions of the same salt, with compression, for accessible surface bleedings. Aqueous solutions of one-half per cent. are efficient. Another convenient mode of employment is in the form of a finely powderd chalk mixed with one-half per cent. solution of the calcium chloride. The less soluble lime salts, such as calcium phosphate, are equally efficient for local application. (3) The use of a combination of one-half per cent. solution of calcium chloride and one-sixth volume of a solution of nucleo-albumin, for local application. The nucleo-albumin can be obtained from aqueous extracts of various cellular tissues—testicle, thymus, thyroid, ovary, etc. If the prepared extracts are not available, a supply may be procured readily by mincing any of these tissues in a weak alkaline solution (1-500 solution carbonate of sodium) and filtering through gauze after a few minutes. (4) The application of a stream of carbonic-acid gas to the bleeding surface, in accessible hemorrhage. Its inhalation, freely mixed with ordinary air or oxygen, in concealed hemorrhage. (5) The use of four per cent. solution of choral hydrate for surface bleeding, and also of adrenalin (1-1,000) with compression.

Large Dose of Quinine in Pneumonia.—F. H. POOLE (*Journal A. M. A.*, June 3) reports that he has recently treated thirteen consecutive cases of pneumonia among Indian school children with large doses of quinine, according to the method advocated by GALBRAITH (*Journal A. M. A.*, January 28, 1905, p. 291) without mortality. The initial symptoms common to all cases were intense frontal headache, epigrastic distress and vomiting, and in eight cases epitaxis also occurred as an initial symptom. Three of the five boys had epistaxis at the onset and all had it repeatedly during the quinine treatment. Of the eight girls five had it as an initial symptom. Two of these had never menstruated, but the menses appeared during the treatment; in the other three they also appeared, though not due, and in spite of the fact that the patients had always previously been regular in this respect. In none of the girls did epistaxis appear after the initial symptoms. Poole asks: was this hemorrhagic tendency a part of the disease and peculiar to this epidemic, or were the epistaxis of the onset due to the infection and the later hemorrhages to the treatment? The minimum single dose of quinine given was fifteen grains, the largest thirty-six grains. These large doses proved a genuine stimulant to the heart and circulation and appeared largely to allay the anxiety of the patient and to secure sleep.

Council on Pharmacy and Chemistry Reports on Acetanilid Mixtures.—The first official publication made by the Council on Pharmacy and Chemistry, appears in the *Journal A. M. A.*, May 27. A sub-committee has purchased in the open market original sealed packages of various proprietary and patent remedies containing acetanilid—some of them represented to be chemical compounds and publishes results of its examination of them as follows: Ammonol: acetanilid, 50; sodium bicarb., 25; ammonium carb., 20. Antikamnia: acetanilid, 68; caffeine, 5; citric acid, 5; sodium bicarb., 20. Koehler's headache powders: acetanilid, 76; caffeine, 22. Orangeine: acetanilid, 43; sodium bicarb., 20; caffeine, 10. Phenalgin: acetanilid, 57; sodium bicarb., 29; ammonium carb., 10. Salacetin: acetanilid, 43; sodium bicarb., 21; sodium salicylate, 20. All of these were mixtures. The *Journal*, commenting on the work, calls attention to the danger involved in the physician's prescribing such a remedy as one of the above without knowing that it contains acetanilid. The report is extremely conservative, and repeated analyses have been made so that no erroneous statement should be published.

PATHOLOGY AND BACTERIOLOGY.

The Bone-Marrow in Disease.—Even in this age of active pathological research, the bone-marrow has rarely received sufficient attention and it is to the credit of B. WOLOWNIK (*Zeitsch. f. klin. Med.*, Vol. 56, Nos. 5 and 6) to have pointed out that very often characteristic pictures are obtained in the various disorders. Thus, in tuberculosis, sepsis, pyemia, heart disease, nephritis and carcinoma, the myelocytic type prevails, while in pneumonia, cirrhosis of the liver and other pathological conditions, the lymphocytes are particularly common. There seems to be a distinct parallelism between the large lymphocytes and the myelocytes, and the polynuclear neutrophiles are usually most numerous with suppuration or ulceration. The largest percentage of eosinophiles occurred with pneumonia and nephritis, and if the eosinophiles were increased in other diseases, a nephritis was usually also present. In tuberculosis and carcinoma, a marked increase of giant-cells and normoblasts was noted and a very low percentage of megaloblasts seemed characteristic for nephritis and a few cases of carcinoma.

Agglutination and Hemolysis Through Staphylococci.—In order to determine if there is any difference in the behavior of staphylococci, C. FRAENKEL and O. BAUMANN (*Münch. med. Woch.*, May 16, 1905) examined a large number of these germs from various sources. Hemolytic action was not shown by all, and some dissolved the red blood cells of rabbit's blood early, others late. The most intense hemolytic action was always manifested by the most pathogenic types. Hemolysis could be checked by antihemolysin, obtained by treating rabbits with gradually increasing doses of staphylolysin. The staphylolysin possesses both a haptophor and a toxophor radical; if kept at a low temperature with some red blood cells, the haptophor radical will unite with the latter without causing a solution

since the toxophor radical acts only at a higher temperature. Staphylococci which did not bring about hemolysis at first, did not acquire this property even when injected into mice. An interesting observation made, was that staphylococci causing hemolysis are not well agglutinated by staphylococci which lack this property. The authors therefore conclude that two varieties of these germs should be recognized: hemolytic, pathogenic and non-hemolytic, saprophytic staphylococci.

Toxic Action of Sublimate.—According to D. BOKORNY (*Münch. med. Woch.*, May 16, 1905), algae forms excellent objects to study the toxic action of sublimate, since the earliest changes can well be observed under the microscope. The surprising observation has been made that if a certain amount of algae is added to a solution of sublimate as dilute as 1 to 1,000 million, distinct discoloration of the chlorophyll bands may be seen after eight days, showing that death of tissue has set in. The cause of this is an absorption of sublimate by the tissues, so that eventually a much larger amount is brought into contact with them. By a large series of experiments, it could be determined that 0.5 milligrams of sublimate can poison 100 milligrams of protoplasm.

A New Counting Chamber for Blood.—A new counting chamber, devised by K. BURKER (*Münch. med. Woch.*, May 9, 1905) is said to be free from all the defects of the original Thoma-Zeiss chamber. The cover-glass can be made to fit very tightly, since it is adjusted before the chamber is filled. Unequal distribution of the red cells is avoided as the chamber fills instantaneously by capillary attraction. Since the chamber is open on two sides, atmospheric pressure will have no influence, and perfectly accurate counts are possible in high altitudes. The counting is facilitated by a scale to be placed into the ocular of the microscope, while in another form, the chamber itself is ruled into squares.

The New Asiatic Blood Fluke.—CH. WARDELL STILES (*Am. Med.*, May 20, 1905) calls attention to the fact that the newly described Chinese blood fluke *Schistosoma cattoi 1905*, may be identical with a fluke *Schistosoma jatonicum 1904*, described for man and cats in Japan. The new species is characterized by the absence of spinose warts on the male and the absence of spine on the egg, while the African blood fluke *Schistosoma hæmatobium*, has spinosa warts on the male and a terminal or subterminal spine on the egg. Clinically, in cases of infections with the African fluke both visical and rectal symptoms have been reported, but all reported infections with the new Asiatic fluke have thus far been intestinal. Another important clinical point is the possibility that some of the cases of cerebral distomatosis, heretofore attributed only to the lung fluke *Paragonimus westermanii*, may possibly be due to the new Asiatic blood fluke.

The Elective Action of Chloroform on the Liver.—Doyon has demonstrated that in certain conditions chloroform produces the following parallel changes: Incoagulability of the blood, a disappearance of filbrinogen from the plasma and lesions of the liver. M. DOYON and J. BILLET (*Comptes Rendus*, May 8, 1905) have found that chloroform has an elective action on the liver, with the exclusion of all other organs, with the exception of the kidneys. Introduced into the stomach of the dog, chloroform causes the following changes in the liver: Abundant hemorrhages, an enormous accumulation of polynuclear leucocytes in the interlobular spaces, degeneration of the hepatic cells, particularly a general marked fatty degeneration. The kidneys show the lesions of acute nephritis.

Action of Permanganate of Calcium Upon the Toxins of Tetanus, Diphtheria and Tuberculosis.—The subject of the internal administration of antiseptics in the treatment of bacterial infections has been discouraged because of the well-known toxic effects of the latter on the organism. J. BAUDRAN (*Comptes Rendus*, March 27, 1905), investigated the effect of calcium permanganate on various toxins, and found that it not only destroys their chemical identity, but also inhibits their physiologic effect. In the case of tuberculin it was found that while sodium and potassium permanganate does not interfere with the action of this toxin, the calcium salt markedly destroys its toxic effects.

PRESCRIPTION HINTS.

Hyperacidity of the Stomach.—In patients who persistently complain of acidity of the stomach associated with great discomfort or real pain it becomes necessary to counteract the hyperacidity by the frequent administration of alkalies. Ewald has obtained marked success by combining with the alkalies rhubarb and sugar.

℞ Magnes. ust.
Sodii carbonat. } aa gr. lxxv
Potassi carbonat.
Pulv. rhei ..... gr. cl
Sacch. lactis ..... ʒvii

M. Sig. Take three to five grains dry on the tongue every hour.

Chronic Gastritis.—In conjunction with lavage, and with galvanism should there be excessive gastralgia, the best results in the treatment of chronic gastritis may be obtained by the administration of cannabis indica, sulphate of codeine and nux vomica, especially when given in the following combination:

℞ Codeinæ sulphat ..... gr. iii
Extract. cannabis indicæ ..... gr. ii
Extract. nucis vomicæ ..... gr. iii

M. et ft. pil. No. xii.
Sig. Take one three times daily after meals.

Delirium Tremens.—When the patient has reached the stage of alcoholic indulgence characterized by insomnia, great excitability and inability to retain food, it is best to administer an active cathartic as

℞ Pulv. jalapæ comp. ..... gr. x
Hydrarg. chlorid. mitis ..... gr. v
Sodii bicarbonatis ..... gr. v

M. Sig. On the tongue at once.

Should the heart show weakness, the following may be given with benefit:

℞ Tinct. capsici ..... ʒiv
Tinct. digitalis ..... ʒiv
Tinct. nucis vomicæ ..... ʒii
Spiritus ammon. aromat. ..... q.s. ad. ʒiii

M. Sig. Teaspoonful in water every four hours. The extreme nervousness and insomnia will require the milder sedatives or even the hypodermic use of morphine.

For Epistaxis.—

℞ Adrenalini chloride ..... gr. ½
Acid boraci ..... gr. xlv
Aquæ cinnamonie } aa ʒx
Aquæ camphoræ }
Aquæ destillatæ ..... q.s. ad. ʒiii

M. Sig. Instil into nostrils with a dropper.

THE MEDICAL NEWS.

A WEEKLY JOURNAL

OF MEDICAL SCIENCE.

COMMUNICATIONS in the form of Scientific Articles, Clinical Memoranda, Correspondence or News Items of interest to the profession are invited from all parts of the world. Reprints to the number of 250 of original articles contributed exclusively to the MEDICAL NEWS will be furnished without charge if the request therefor accompanies the manuscript. When necessary to elucidate the text, illustrations will be engraved from drawings or photographs furnished by the author. Manuscript should be typewritten.

SMITH ELY JELLIFFE, A.M., M.D., Ph.D., Editor,
No. 111 FIFTH AVENUE, NEW YORK.

Subscription Price, including postage in U. S. and Canada.

PER ANNUM IN ADVANCE	$4.00
SINGLE COPIES	.10
WITH THE AMERICAN JOURNAL OF THE MEDICAL SCIENCES, PER ANNUM . .	8.00

Subscriptions may begin at any date. The safest mode of remittance is by bank check or postal money order, drawn to the order of the undersigned. When neither is accessible, remittances may be made at the risk of the publishers, by forwarding in *registered* letters.

LEA BROTHERS & CO.,
No. 111 FIFTH AVENUE (corner of 18th St.), NEW YORK.

SATURDAY, JULY 22, 1905.

HEAT PROSTRATIONS.

BY the medical profession nothing significant has been contributed to the knowledge of heat prostration since Bennett Dowler, of New Orleans, clinically differentiated heat exhaustion for thermic fever, H. C. Wood, of Philadelphia, formulated the pathological theory, and Ira Van Gieson, of New York, demonstrated the histological changes in the cells of the brain and spinal cord. This accumulated medical knowledge is not available, as such, for the laity, but the ignorance which in many cases is responsible for heat prostrations should be combated, and in this item, as elsewhere, the medical profession should assume its function, so often emphasized of late, as an educator of the people and an advocate of prophylaxis.

When, however, in spite of exhortations to avoid the direct rays of the sun, to eat sparingly and to bathe frequently, prostrations occur, then it becomes incumbent upon the physician to bring to the emergency trained powers of diagnosis and accurate and efficient treatment. Absolutely essential is the differential diagnosis of heat exhaustion from thermic fever, the former being due to a vasomotor palsy of central origin, and the latter to a paralysis of the heat inhibitory center. Heat exhaustion is characterized by extreme prostration, collapse, restlessness, and in severe cases, by delirium. The temperature is often subnormal On the other hand, thermic fever usually sets in during exposure, with pain in the head, dizziness, oppression, nausea and vomiting. Sudden unconsciousness often initiates the attack, and the fever is usually extreme, not infrequently running to 112° F. However, such a temperature gives no grounds for despair, since a patient, admitted to the Presbyterian Hospital in New York, in August, 1896, with a temperature of 115° F., recovered. When it is borne in mind that heat exhaustion is a condition of prostration and collapse its treatment becomes sufficiently obvious, whereas in thermic fever the primary indication is to reduce the temperature as rapidly as possible. The most efficient means of accomplishing this is by the application of cold to the surface of the body, which was used in the New York Hospital as early as 1857, with excellent results. The cold bath is the form of application usually adopted. Other indications are met symptomatically.

Aside from the danger of immediate death, the physician must keep in mind the possibility of disastrous sequelæ. The most serious of these are insanity and meningitis, and the former occurs more frequently than is commonly supposed.

THE PANAMA SITUATION.

THERE is no dearth at present of large and significant matters to fill the public mind, and none perhaps which comes home more vitally to the American people than that which concerns the so-called Canal Zone of Panama. Governmental action there has been commented on by the general press in a spirit of more or less acrid criticism. This is what might be expected, since there is undeniably room for criticism, and the government is the legitimate target for it, in view of the specific concessions of the treaty now in operation. In brief, these concessions give complete and sovereign control over a "zone of land and land under water . . . extending to a distance of five miles on each side of the center line of the route of the canal . . . with the proviso that the cities of Panama and Colon and the harbors adjacent to said cities shall not be included within this grant." Article 7, too long to quote, further provides that in the cities mentioned the United States shall have absolute control as far as is necessary of all matters pertaining to sanitation. Consequently, ultimate failure to

secure workable sanitary conditions implies either insurmountable obstacles or else unwise or unscrupulous action on the part of the officials in control. The chief obstacle encountered by the French in their attempt on the isthmus was the lack of authority to enforce sanitary regulations. This hampering factor has now been eliminated, and in contemporary parlance it is "up to" the American Government.

To be sure, there are natural obstacles of no mean dimensions. The problem of creating *de novo* in a tropical climate a sanitary system covering some five hundred square miles, including a population rapidly approaching 50,000, capable of protecting not only the native population but also the large alien element necessary to the officering of such an enterprise, will tax to the utmost the most competent sanitary experts. At the time when the United States assumed control, the towns and villages along the canal line were in a state of almost inconceivable filth, and the hospitals were entirely inadequate. One of the hospitals, that at Ancon, arranged on the pavilion plan, possessed buildings in a fair condition and situated favorably upon an elevation above the city. The company's hospital at Colon needed a thorough remodeling and repairing to make it available, and at best the capacity of these institutions was seriously disproportionate to the demands likely to be made upon them.

The chief diseases prevalent in the canal zone during the past year were beriberi, dysentery, malaria, tuberculosis and yellow fever. Of these the ones toward which sanitary measures must be directly aimed are malaria and yellow fever, for it is these that the alien is most likely to contract. The presence of yellow fever on the isthmus, though serious, has not become alarming, according to official reports, but the general prevalence of malaria is shown by the fact that microscopic examination of the blood of 669 individuals, selected indiscriminately, revealed in 340 the presence of some type of malarial parasite. From these investigations it is fair to conclude that approximately 60 per cent. of the population are thus infected. This statement assumes an added seriousness that we note that in the vast majority of cases, where the type of organism was definitely classified, it was found to be the æstivo-autumnal.

The two cities, Panama and Colon, included in the Canal Zone were found to be in imperative need of proper sewage system, and in the case of the latter a great difficulty is presented by its location. This city is built on a flat, sandy island, no part of which is more than a few feet above mean sea level. Some years ago the Panama Railroad Company built a small reservoir about two and one-half miles from the city, which supplies water "of an indifferent character" to the official quarter of Colon, the remainder of the population being limited to such rainwater as is collected from the roofs of the buildings. The difficulties of sewage disposal under such conditions are obvious.

In the face of these obstacles something, nevertheless, has already been accomplished. The hospitals referred to have been repaired and modernized, and another in Colon, hitherto under the control of the Panama Railroad Company, has been acquired. A large convalescent home for canal employees is also being equipped on an island in the Bay of Panama. Furthermore, in a recent interview, Mr. Shonts makes the following statement:

"Water has already been introduced in the city of Panama from spring-fed lakes. Panama has been sewered, the houses are being fitted with modern plumbing, and we have ordered I don't know how many millions of vitrified brick for paving. Colon will soon have its water supply from the mountains, and it will undergo the same process. Every house is to be fumigated and everything that human science can do will be done to stamp out the yellow fever. Oil has been spread over all the pools and swamps to kill the mosquitoes, the old seaweed has been torn up and thrown in the sun. In a dozen different directions the activities of the health officials are being exerted."

In view of the obstacles encountered and the comparatively short time which has elapsed, this would seem no trivial record. Dr. W. C. Gorgas, Colonel U. S. A., Chief Sanitary Officer, took up the task with a full realization of its difficulties. He himself said: "We shall, no doubt, meet with many disappointments and discouragements, and shall succeed in the end only after many modifications of our plans and after many local failures." Such an attitude presages better for the success of the undertaking than a more confident and less comprehending one. Dr. Gorgas has a right to speak with authority in such matters, for his accomplishment of the sanitation of Havana is still fresh in the public mind.

Naturally the methods so successful in Cuba are the ones to be applied here, and although the climatic and geographic factors are less calculable

it requires no very strenuous optimism to predict the ultimate success of these measures, namely, a systematic cleaning up of the terrain, an equally systematic destruction of the *Stegomyia fasciata* and *Anopheles*, together with their breeding places, and the treatment under screening of all infected or suspected cases.

The lax enforcement of quarantine regulations at the ports has also been replaced by a rigorous system of inspection, to the end that infectious diseases may not be introduced from abroad.

Another factor which might be classed as a natural obstacle, and one with which Dr. Gorgas had full experience in Cuba, consists of the distrust manifested by the native population toward hospital treatment and prophylactic measures. The overcoming of this distrust was one of the notable achievements of Dr. Gorgas's success in Cuba, and it is gratifying to note that a campaign of education, directed toward securing the coöperation of the native population of the Isthmus, bids fair to be promptly effective. "General faith in Dr. Gorgas," said one of the employees, "is the only thing that keeps any of us on the Isthmus."

Yet at the present moment, in spite of the precautions thus far taken, reports from the isthmus are none too encouraging. Even after allowance has been made for panic and natural exaggeration it must nevertheless be admitted that yellow fever is still endemic, and that the mortality and sickness have increased. The isthmus is not yet a safe and healthy dwelling place for either the native population or the immigrant. Yet until such a condition is attained, the vast engineering scheme upon which the government has embarked must remain in abeyance. As the chairman of the committee justly remarks: "Our first duty is to create sound underlying conditions. This is now vastly more important than the moving of dirt."

That President Roosevelt strongly concurs in this view of the situation is shown by his remarks before the Associated Physicians of Long Island on July 12, at Oyster Bay. He, too, recognizes the difficulties. Among other things he said:

"Now, of course, in doing a great work like that in the tropics, in a region which, until this Government took hold of it, was accounted to be a region exceptionally unhealthy, we are going to have trouble, have some yellow fever, have a good deal of malaria fever, and suffer more from the latter than from the yellow fever, although we will hear nothing like the talk about it. What is being done in Panama is but a sample of the things that this country has done during the last few years, of the things in which your profession has been so prominent a part. Take what we did in Cuba, where we tried the experiment which had not been tried for four hundred years, of cleaning the cities. One of the most important items of the work done by our Government in Cuba was the work of hygiene. This country has never done better work, that is, work that reflected more honor upon the country, or for humanity at large."

Mr. Roosevelt further emphasizes, as does Mr. Shonts, the fact that the gloomy reports brought back from the isthmus emanate either from persons who should never have gone there at all, or from those who were not assigned to proper work on their arrival.

The general public, with characteristic impatience for results, betrays a slight inclination to become disheartened over the Panama situation. Yet a fair and reasonable estimate permits a forecast far from gloomy. If the authorities, concurring with Mr. Shonts, that sanitation must precede excavation, give Dr. Gorgas a free hand to push the work in this direction as speedily and thoroughly as possible, and if only those set out for the isthmus who know where they are going and what they are going for, who possess a mental equilibrium proof against panic and a physique reasonably capable of withstanding the environment, then the construction of the Panama Canal may proceed to completion without any appalling sacrifice of human life.

In short, the proper view of the situation preserves a balance between irresponsible optimism and premature pessimism, the sane, clear-sighted attitude which estimates the difficulties at their proper magnitude, calculates adequate measures for their removal and makes haste slowly toward the desired goal.

THE EXUDATIVE DIATHESIS.

THERE is a manifest tendency, on the part of modern clinicians, to reject certain morbid conditions as distinct pathological entities, and to include them under larger groups, as mere variations of the same fundamental process. To the larger groups the term diathesis is applied, and to the already numerous list of diatheses, a new one has been added. Professor A. Czerny (*Jahrbuch f. Kinderheil.*, January 2, 1905); whose opportunities for observation in the children's ward of Breslau are unexcelled, is the author of this new expression, the "exudative diathesis." This

term connotes no new disease, but is meant to include a large number of conditions that are observed among young children, which, while individually they are apparently trifling, are nevertheless the cause of considerable anxiety to the pediatrist.

These conditions have been hitherto classified under the rather indefinite "scrofula" of the older writers. One hears very little of this disease nowadays, for many of the cases which have formerly been diagnosed as scrofula are now recognized as tuberculosis, in its myriad forms. Yet not all cases of scrofula are tuberculosis. There is still a good deal of difference of opinion as to the proper boundary-line between the two diseases. In order to avoid the confusion attending the use of the older word, Czerny rejects the term scrofula and applies to many of the cases that have been included under it, the expression, "the exudative diathesis."

This condition rests upon a marked hereditary basis. In most cases, however, the parents do not recall or are ignorant of the fact that they themselves had evidences of this constitutional disorder during childhood or infancy. In the same family different children may show widely diverse manifestations of this affection, which may, in fact, express itself in a multitude of ways.

Among these manifestations the most common is the so-called "geographical tongue." This is really an exudation into the mucous membrane covering the latter organ, which may disappear and reappear haphazard on various parts of the tongue. Another common symptom is the seborrhea of the scalp in infants, which primarily is simply an exudation beneath the skin, but owing to irritation is frequently converted into an eczema. Of similar nature is strophulus, which is usually found upon the cheeks, principally in fat infants, and is often the forerunner of facial eczema.

The above cutaneous lesions may be compared to the exanthem of infectious diseases, and like them have frequently associated with them an exanthem, or eruption on the mucous membranes. These epithelial lesions are exceedingly prone to irritation and consequent infection and accordingly one sees commonly a tumefaction of the cervical lymph-nodes. This explains the enlarged glands of the already obsolete scrofula. These, together with the above sources of infection, may become the portal of entry for tuberculosis. Hence one can understand the confusion of the older writers in confounding tuberculosis with scrofula, and characterizing both as primary diseases, whereas they are really secondary to the exudative diathesis.

The geographical tongue, seborrhea of the scalp, and strophulus are seen in infants less than one year of age. Older children display, as a rule, quite different expressions of the exudative diathesis. In them are found a tendency to repeated attacks of follicular tonsillitis, which, recurring at regular intervals, cannot be attributed to mere exposure, but must be assigned to some constitutional dyscrasia. In many of these children are found hypertrophy of the lymphoid follicles of the nasopharynx, and in some of them occur periodical attacks of croup.

The frequency of secondary complications that occur in the course of the exudative diathesis, such as enlarged glands, tuberculosis, etc., renders the subject of treatment of this condition of extreme importance. One should avoid a diet that has a tendency to make the child too fat. The country-air has a favorable effect on the disease, while the city-air, with the accompanying crowding and ill-ventilation, favors its development.

ECHOES AND NEWS.

NEW YORK.

Ambulance Accidents.—Three accidents to ambulances, besides one runaway, which fortunately did no damage, is the record of the past week.

Rich Gift to Hospitals.—The will of Margaret A. Jones, filed for probate July 15, divides her residuary estate, which will probably be more than $900,000, in equal shares among St. Luke's, the Presbyterian and the Post-Graduate hospitals of this city. The principal of the share going to St. Luke's is to be known as the Margaret Jones fund, in memory of Miss Jones's mother. That going to the Presbyterian will be known as the Margaret A. Jones fund, and the Post-Graduate devise will form the David Jones fund, in memory of Miss Jones's brother. The incomes of these funds are to be used in providing free beds.

Ship Had One Plague Case.—Capt. Williams, of the British steamship Indrani, which arrived July 17 from China and Japan, reported to Health Officer Doty, at Quarantine, that a month ago, at Suez, one of the ship's crew, a Lascar, was taken ashore ill apparently of bubonic plague. On Saturday, about forty miles off this port, another Lascar died and was buried at sea. The captain said this man did not have the plague. Dr. Doty made a careful examination of the crew of forty-eight men, all Chinese and Lascars, and found that none was ill. As a precautionary measure, however, he decided to send all hands to Hoffman Island for observation.

"Beauty Doctor" Arrested.—Dr. Andrew L. Nelden, of 13 East Twenty-ninth Street, who maintains an "Institute and Sanitarium for Plastic Featural Surgery," was arrested last week on the charge of

obtaining money under false pretenses. The complainant was Mrs. Josephine Ware, of Denver, Colo., who charges that he contracted to smooth out wrinkles on her face and forehead, and after more than six weeks' treatment left her face badly scarred. Three other out-of-town women have made complaints to the District Attorney's office that they were similarly treated. Three women and a man, all patients, were found in Dr. Nelden's house when he was arrested. Innumerable letters were found at the "Institute" complaining of the results of his treatment. He is the same man who made such a successful bid for notoriety a few years ago by advertising for an ear, claiming he wanted to graft it upon a patient.

Enlarging Ellis Island.—Work was begun July 20 on the first crib for the outer retaining wall of the Ellis Island extension, which the Department of Commerce and Labor is making for a hospital site for contagious diseases among immigrants arriving at this port. At present all contagious cases among immigrants landing at Ellis Island are cared for by the New York Health Department at North Brother Island, under a contract with the Federal authorities. Over a year ago Health Commissioner Lederle notified Immigration Commissioner Williams that this contract would have to be abrogated, because the city had not the facilities for handling the large number of cases sent from Ellis Island, in addition to its own cases. The extension, for which the Government appropriated $100,000, is to be an island 800 feet long, 250 feet wide, with a basin 250 feet wide and 1,100 feet long, between it and the present hospital island. The contractors have 250 days in which to complete the work.

Trachoma Among Immigrants.—Since the first of June there has been a marked increase in the number of cases of trachoma among the immigrants arriving at Ellis Island. As a result not only a majority of the patients in the hospital at the island are held there because of this disease, but about one-third of those who are cared for, among the overthrow in the Long Island Hospital, are trachoma cases. Dr. Stoner, chief of the Marine Hospital Corps on Ellis Island, who has just returned from a tour of inspection along the Canadian border, visited the Long Island Hospital to inspect the immigration cases there. Speaking of the increase of trachoma during the past two months, he said: "It looks to me as though they had been held up on the other side until they secured a favorable opportunity to rush them into this country, and than all were shipped over in a bunch. Most of the cases we have held up during June and the early part of this month are from Mediterranean ports, and, as some of the ships were overdue in arriving here, it happened that we got an unusually large number of people from that section in groups. Invariably there were many trachoma cases, and the fact that they came in this way makes me think there was a concerted movement to work them into the country."

Superintendent of Bellevue.—As we anticipated in our last issue, the trustees of Bellevue and Allied Hospitals on July 13 appointed Dr. Samuel T. Armstrong, medical director of the Washington Life Insurance Company, superintendent of the city hospitals. Dr. Armstrong, although second on the civil service list for the place, was the choice of Dr. John W. Brannan, the president of the Board of Trustees. Dr. Armstrong has had a great deal of experience in the construction of hospitals in Cuba and the Philippines, having served as a surgeon in the army and in the United States Marine Hospital Corps. The trustees think his experience in that line will be of particular value in the construction of the new Bellevue Hospital, the bids for which have already been received. Dr. Armstrong was born in St. Louis forty-five years ago and received degrees from the St. Louis Medical College and the St. Louis University. After ten years' service in the Marine Hospital Corps he came to New York, in 1890, and was made visiting surgeon to the Harlem and Willard Parker hospitals. At the outbreak of the Spanish-American war he entered the army as Surgeon-Major. He resigned in 1901. Work on the new Bellevue Hospital will be commenced as soon as the trustees receive an opinion from the Corporation Counsel on their right to accept alternative bids; that is, bids wherein materials are substituted other than those provided for in the specifications.

City Consumptive Hospital.—Health Commissioner Darlington has obtained from the Board of Estimate an appropriation of $250,000 for the establishment of a tuberculosis sanitarium at Mount Hope, in Orange County, N. Y. As a result of his investigations he recommended to the Board of Estimate the purchase of 1,200 acres on the summit of Shawangunk Mountain. The site is about seventy-seven miles from this city and twenty-five miles from the Hudson River, back of West Point. It is 1,250 feet above the sea level. Dr. Darlington informed the board that he had succeeded in obtaining the necessary consents for the use of the place as a sanitarium for consumptives, and, upon hearing that, the appropriation was at once granted. The land is now occupied by farmhouses and cottages, and it is the intention of Dr. Darlington to use these for the accommodation of patients immediately without waiting for the building of the large hospital and cottages. With the houses which will be at his disposal at once Dr. Darlington said yesterday that he could take care of at least 400 patients. It is his intention to treat only incipient cases of tuberculosis. The Commissioner explained that there are in this city something like 25,000 consumptives, and that in order to help these sufferers it would be the object of the sanitarium to spread information as to the habits and treatment of persons afflicted with the disease should follow.

PHILADELPHIA.

Dies of Sea-Sickness.—An immigrant girl from Hungary, who just landed in this country, died in the Altoona Hospital, of sea-sickness. Soon after the steamer sailed she became ill and grew steadily worse. When she landed at Ellis Island the girl was not able to stand.

Hospital Crowded.—The Jefferson Hospital is so crowded that no new cases can be taken in at the present time. Emergency cases will be treated and then transferred to other institutions. The repairs which are being made in the medical and children's wards are largely responsible for the crowded condition.

Sanitarium for Consumptives Must be Abandoned.—Because of the petition of complaint filed by the residents of Mt. Airy against the establishment of a sanitarium for tuberculous patients in that neighborhood, Judge Beitler made a personal investigation of the neighborhood. He decided that the institution could not remain upon that plot of ground, since there is a clause in the deed which prevents the establishment of saloons, factories, or anything that may affect the health and comfort of the neighbor-

hood. The Judge said that he was convinced Miss O'Hara is doing her best to make the institution as little annoyance to the neighbors as possible.

Medical Inspectors Make House-to-House Visits.—Director Martin, of the Department of Health, has detailed the entire corps of assistant medical inspectors to visit the homes of the poor and to give the mothers instruction as to the care of infants during the warm weather. When a child needing medical treatment is found it is reported to a ward out-door physician of the Bureau of Health. In order to avoid an outbreak of smallpox the inspector will determine whether or not the persons visited should be vaccinated. In the event that they refuse such an operation their employer will be notified that such persons are a menace to the health of his employees. Their discharge will be requested.

CHICAGO.

Fresh Air Tent House for Children.—The Chicago Relief and Aid Society is making a new experiment in charitable endeavor, by establishing fresh air stations for sick babies in the poorest and most densely populated sections of the city. A small structure of wood and canvas has been built and appropriately termed a "tent house," on the grounds of the Northwestern University Settlement. The Visiting Nurses' Association has volunteered to supply a corps of nurses to attend the little ones, and several hospital physicians have given their services, so that the best of care is guaranteed the inmates. Sterilized milk is furnished by the Children's Hospital Society, and the officers of the University Settlement have given the use of the kindergarten bathrooms, and another large, airy room that is to be used to accommodate the babies for whom there is not enough space in the tent house. If the plan proves successful it is the intention to establish a large number of similar institutions through the congested districts.

City Water Supply.—Since the excessive precipitation of May (5.14 inches, as against the thirty-odd years' May average of 3.75 inches) there has been a marked depreciation of the sanitary quality of the public water supply. During April the supplies from all sources averaged 88.4 per cent "safe;" in May the average was 56.9, and in June only 53.3 per cent. "safe." The effects are seen in an 88 per cent. increase of the deaths from the acute intestinal diseases—contributed to largely by the increasing temperature. During the first fifteen days of July the average of the supplies from all sources has improved to 78.8 per cent. "safe." That from the Ashland Avenue pumping station—although supplied from the same intake as the Chicago Avenue and the Harrison Street stations—continues unaccountably bad. It has averaged only 18.2 per cent. "safe," while that from the other two stations on the same supply lines has averaged 81.8 per cent. "safe." Investigation by the City Engineer is being made for what is, undoubtedly, some local cause for this pollution.

Fourth of July in Chicago.—Notwithstanding the strenuous efforts of the medical profession and of the press, both lay and professional, Four-of-July casualties continue to increase year by year. As tabulated July 6 of last year they numbered 2,431 for the whole country. On the same date this year 3,169 had been reported—an increase of 30 per cent. Of these totals there were 103 in Chicago last year and 132 this year—substantially the same proportion of the total in each year. Up to July 15 of each year there had been 100 deaths from these accidents in 1904 and 92 in 1905. The death-rate last year was, therefore, 4.1 per cent;. this year it was only 2.9 per cent. Had the death-rate of 1904 obtained this year there would have been 129 deaths among the 3,169 casualties, instead of 92. This reduction of nearly 30 per cent. in the death-rate is to be attributed solely to the improved treatment of this class of wounds, advocated persistently by the department for many years. It is, however, not at all flattering to civic nor to professional pride to note that—while the death-rate of all cases in 1904 was 4.1 per cent. the rate of the Chicago cases in that year was 10.7 per cent.; this year the respective rates are 2.9 per cent. of all cases and 9.9 per cent. of Chicago cases. Obviously, there is urgent need of further efforts in this city.

GENERAL.

Appointment of Dr. Ray.—Dr. Wyeth E. Ray, Yale Medical School, '98, has been appointed Associate Medical Director of the Travelers' Insurance Company, of Hartford, Conn.

Appointment of Dr. Ohlmacher.—Dr. A. P. Ohlmacher has been appointed Director of the Biologic Laboratories of Frederick Stearns & Co., of Detroit, Mich., and has entered upon the active duties of the position.

Smallpox Kills 3,279.—The statistics of the smallpox in Valparaiso, Chili, from January 1 up to the 10th of the present month show 3,279 deaths. A report dated July 15 says during the last forty-eight hours 104 new cases have been reported. Twenty-two bodies were picked up in the streets yesterday. Typhus fever and chickenpox have broken out in Santiago, assuming epidemic proportions.

A Doctor in Cabinet.—The American Medical Association, in convention at Portland, Ore., adopted a resolution offered by Dr. Liston H. Montgomery, of Chicago, advocating the creation of a new Cabinet place, to be known as the Department of Public Health, the secretary of which is to rank with other Cabinet officers. The resolution calls for more stringent laws for the prevention of diseases, and urges Congressional action.

International Medical Congress.—The next International Medical Congress will be held in Lisbon, April 19 to 26, 1906. It is expected that it will be one of unusual importance, for a meeting which will be held in what has always been considered as an out of the way country. Already the titles of papers from some of the most distinguished men of the medical profession have been received. Many interesting topics for discussion have been selected by the executive committee.

Dr. Burnham to Head Consumption Hospital.—The Board of Managers of the New York State Hospital for the Treatment of Incipient Tuberculosis has appointed Dr. Melvin Page Burnham, of New York City, acting superintendent, to succeed Dr. J. H. Pryor, resigned. Dr. Burnham has been for three years resident physician of Seton Hospital at Spuyten Duyvil, a tuberculosis sanatorium of 300 beds. He is highly recommended by New York experts.

Changes in the Pharmacopœia.—In the new United States Pharmacopœia the following changes are noted: The strength of tincture of aconite has been reduced from 35 per cent. to 10 per cent., and that of tincture of veratrum from 40 per cent. to 10 per cent. The strength of tincture of strophanthus has been increased from 5 per cent. to 10 per cent. These changes officially go into effect on September 1, 1905.

New Hospital for Brooklyn.—Charities Commissioner Tully has purchased a piece of property in Dumont Avenue, between Bradford Street and Miller Avenue, in the East New York district, Brooklyn, as the site for the new hospital which is to take the place of the Bradford Street Hospital. The building will have a frontage of 200 feet on Dumont Avenue and a depth of 280 feet. It is Mr. Tully's intention to build only a small structure at first, at a cost of $60,000, so designed as to permit the erection of wings later on.

Death Total on Railroads.—Accident Bulletin No. 15, just issued by the Inter-State Commerce Commission, giving an account of railroad accidents in the United States in January, February, and March, 1905, shows that in that period 28 passengers and 204 employees were killed and 1,651 passengers and 2,062 employees hurt in train accidents. Other accidents to passengers and employees, not the result of collisions or derailments, bring the total number of casualities to 909 killed and 14,397 injured. The total number of accidents was 1,787 collisions and 1,321 derailments. The damage to cars, engines, and roadway by these accidents amounted to $2,449,248.

Queen's New Red Cross Society.—The King and Queen lately inaugurated the formation of a new Red Cross Society, to cooperate with all existing societies in succoring the sick and wounded in time of war. The council appointed the Queen president and Lord Rothschild chairman. At a meeting at Buckingham Palace the Queen made a speech, briefly outlining the objects of the society. In conclusion she said: "I now appeal to all the women of the empire to assist me in carrying out the great scheme, which is essentially the work of women, and which is the one only way in which we can assist our brave and gallant army and navy to perform their arduous duties in time of war."

Next Meeting of the American Medical Association.—The next meeting of the American Medical Association will be held in Boston. The following officers have been elected: President, Wm. J. Mayo, Rochester, Minn.; Vice-Presidents, First, Walter Wyman, Surgeon General; Second, K. A. J. Mackenzie, Portland, Oregon; Third, Edmond D. Martin, New Orleans; Fourth, Eugene S. Talbot, Chicago; General Secretary, George H. Simmons. Medical oration, Frederick G. Shattuck, Boston; surgical oration, Joseph D. Bryant, New York. Board of Trustees (for three years), E. E. Montgomery, of Pennsylvania; H. L. E. Johnson, of the District of Columbia, and A. L. Wright, of Iowa.

Typhoid Fever of Hamlet.—The little hamlet of Collinsburg, about twenty-five miles from Pittsburg, Pa., is undergoing a scourge of typhoid fever, and conditions are of the most distressing character. There are only about thirty houses in the place, and there is not one of them in which at least one case of the fever cannot be found. In some of the homes there are as high as five cases. One man, named Litt, has lost five of his children since the epidemic started, and other families have lost three and four members. Physicians have labored faithfully, but they appear unable to abate the plague or lessen the fatal results of the attacks. Between death and fright the place bids fair to become depopulated. The cause of the epidemic is supposed to be a foul water supply, together with unsanitary conditions.

Day Sanatorium.—A day sanatorium for the treatment of tuberculous patients has been opened on Parker Hill, in Roxbury, Mass. Those needing treatment are driven to the sanatorium and are permitted to spend the day there. This plan will be followed as late as October, if all things permit and sufficient money can be raised from friends outside. Steamer chairs of canvas and others allowing a more upright position were placed under the trees in a most inviting way. Beyond, was the "rest tent," showing couches for those who feel the need of sleep or protection from the weather. During the morning each patient was examined as to pulse and temperature. This will be done every day; weights will be taken twice a week and more thorough examinations made at the end of every month in order that records of each case may be complete. There is a possibility that this section may be too high for some of the patients, but as all are in what is called the "hopeful stage," it is believed that they will all be benefited. There will be practically no medical treatment, although there is every provision for emergencies. Dr. David Townsend, of Brookline, has the general medical supervision of the whole undertaking, with Dr. F. R. Tower on duty during July and Dr. G. W. Hall through August. Dr. E. O. Otis, a recognized authority on treatment for tuberculosis; Dr. Frederick Knight and Dr. H. C. Clapp are the consulting physicians. Mrs. Mary Kehew, Mrs. C. A. Cummings, Rev. P. R. Frothingham, T. M. Clark and G. S. Mumford are among those who are actively interested in the success of this most important undertaking The grounds of the sanatorium were arranged by A. M. Wilson, the secretary of the association, and Mr. Clark.

Home Sanatorium.—A tuberculosis class, or home sanatorium, will be established under the auspices of Emmanuel Church of Boston, consisting probably of not more than fifty members. It is important that the number of patients should be limited in order that the careful supervision so necessary to success may be secured. The object of this plan is to carry out the sanatorium methods in the homes of the patients. Dr. Charles L. Minor, of Asheville, has shown that the hygienic regimen may be employed with success outside of a sanatorium if sufficiently detailed instructions are given and strict discipline maintained. His work has been among the well-to-do educated classes. We believe that equally good results can be obtained in the homes of the intelligent poor. It is known that too great value has been attributed to climate in the treatment of tuberculosis. As has been well said care without climate is more important than climate without care. It is far better to provide the poor consumptives in this locality with facilities for leading an out of door life and with nutritious food than to send them away to a more favored climate, where, however, healthful surroundings, good food and proper medical attention are beyond their slender means. Our work will not duplicate that of existing organizations. It is a supplement, not a substitute, for the tuberculosis dispensary, and is intended for those who are unable to receive the benefit of treatment in the State sanatorium. The essential features in the sanatorium treatment are: (1) Facilities for living an out of door life in all sorts of weather; (2) good food; (3) careful regulation of the details of daily life. The necessary supervision will be maintained by (*a*) frequent visits of the nurse, and occasional visits of the physician; (*b*) weekly meetings in the examining room of the class; (*c*) the individual record book in which each patient will enter the essential details of the day, *e.g.*, the number of hours of rest, the amount of exercise, the diet, and if necessary the temperature. It is essential that each patient should have facilities for living and sleeping out of doors. These may be secured by moving to the upper floor

of an apartment or tenement with a flat roof, so that the patient can live on the roof. The full amount of available sunshine will thus be secured and an atmosphere relatively free from dust. Many of the newer tenement and apartment houses have flat roofs. Some families may prefer moving to the less crowded suburban district where it will be possible to live on a veranda or in a tent. The patients will be aided in providing themselves with bed-tents, shelters from winds, reclining chairs and the proper wraps and coverings, in order that the outdoor life may be comfortable in all sorts of weather. A carpenter will be specially trained to make balconies and tents of the most approved design and these will be provided at the lowest possible cost. Instruction in the nature of the disease and the prevention of its spread will be given. Those in charge of the patient's food will be taught its proper preparation and in special cases, milk, butter, oil and eggs will be furnished. The class will be under the direct supervision and management of Drs. Joseph H. Pratt and John B. Hawes.

A. M. A. Echoes.—Dr. George H. Simmons, the secretary, submitted a concise report containing much interesting information. The establishment of the card index system, biographical in character, was described as being carried forward through the assistance and with the cooperation of medical colleges and secretaries of State licensing boards. The membership on the date of the last report, June, 1904, was 15,334. During the year there have been added 4,889, and 938 have been dropped, 162 on account of death, 176 not eligible, 36 for non-payment of dues, 535 resigned, and 29 were not found, leaving a net gain of 3,951. This makes the total membership on June 1, 1905, 19,285. It is estimated that there are about 17,000 subscribers not members.

From the special committee on National incorporation was received an exhaustive report reviewing the efforts to secure through an act of Congress incorporation of the American Medical Association, the recommendation of which was contained in this brief resolution recommended for adoption: "Resolved, that the efforts to secure National incorporation of the American Medical Association be and hereby are continued, and that the labors relating thereto become a part of the duty of the Committee on National Legislation, and that these duties be no longer referred to a special committee appointed for that purpose."

Secretary Simmons read a recommendation by which contract doctors in the United States Army should be placed on a ranking list, rather than spend their time "avoiding slights." By the same token the dental corps was also recommended for receiving a certain rank.

Reports were received from the committees on the Rush monument and the Walter Reed memorial fund, the former announcing completion of its work, the unveiling of the monument, and begging to be discharged, and the second reporting the sum of $18,065.75 subscribed and all except $1,871 paid, and asking to be continued for at least another year.

Whether the American Medical Association should publish a medical directory, and, if so, whose names it should contain, was a topic of discussion before the house of delegates. The matter was finally left to the Board of Trustees, and that organization had already come out advocating a directory giving the names of all practitioners licensed by the States. When the directory is published it will be composed of all the licensed doctors, with the members of the Medical Association in black-faced type, to herd the sheep from the goats, as they themselves expressed it.

Eloquent, scholarly and impressive was the memorial address delivered by Dr. Henry O. Marcy, of Boston, on the late Dr. Nathan Smith Davis. The speaker paid tribute to the life work and character of the founder of the Association. He reviewed carefully the early biography of his subject, born in 1817, in New York State, his youth passed on a farm, and received an education in the public schools, for a short period in the seminary at Cazenovia, and at the age of twenty graduated from the College of Physicians and Surgeons of the Western District of New York. He began practice in Binghamton, later removed to New York City, and was the founder of the American Medical Association, being the founder and editor of various of the leading medical journals. In 1849 he transferred to the Rush Medical College, at Chicago, and from that time identified himself actively, not only with teaching, but with almost every sanitary, scientific and educational interest of the city. In 1859 he became the active head of what is now known as Chicago Medical College.

OBITUARY.

Dr. EDWARD S. WOOD, Professor of Chemistry in Harvard Medical School, died at his summer home in Pocasset, Mass., on July 11, from cancer of the intestines. He was one of the most famous chemists in America and an authority on analysis of human blood. He was an expert witness in many murder cases in which the identity of blood stains figured, including the Blindin, Mate Bram and Tucker trials.

Dr. WILLIAM ARMISTED MOALT, a member of one of the oldest families of Maryland, died at the Johns Hopkins Hospital, on July 12, after an operation for appendicitis. Dr. Moalt was a descendant of Ellen North, the first white child born in Maryland. He wrote several books on medical subjects. He had large business interests in the management of his estate and the holdings in this city of his sisters, Mrs. I. Townsend Burden and Mrs. Robert I. Cutting, of New York.

Dr. CLADO, a Greek physician long resident in Paris and a Chevalier of the Legion of Honor, died July 10, as a victim of duty. He returned late at night from Chantilly a few days before, where he had accompanied the Crown Prince of Greece on an automobile trip, and went to a hospital and performed an operation on a poor workman because he conscientiously refused to postpone the operation till the next day. During the operation he slightly pricked his finger. Blood poisoning developed a few days ago, and in spite of the best medical attention the case proved fatal.

Dr. A. PALMER DUDLEY, of New York, Professor of Gynecology in the Post-Graduate Hospital, the Harlem Hospital and the Medical School of Vermont University, died July 15, in Liverpool, England, while on his way to attend the International Medical Congress at St. Petersburg, to which he had been appointed a delegate from the United States. Dr. Dudley was born in Phippsburg, Me., in 1853, and received his medical education at Dartmouth Medical School. He was attending surgeon at the Harlem Hospital and the Randall's Island Hospital, as well as Professor at the Post-Graduate. He was a member of many medical societies and the author of various professional articles. The body will be brought back to Phippsburg for burial. Dr. Dudley had obtained passage on the Oceanic for July 5. A few days before the date of sailing he showed symptoms of pulmonary tuberculosis.

SOCIETY PROCEEDINGS.

THE AMERICAN MEDICAL ASSOCIATION.

Fifty-sixth Annual Meeting, held at Portland, Oregon, July 11, 12, 13 and 14, 1905.

FIRST DAY—JULY 11TH.

GENERAL SESSION.

The meeting was formerly opened by prayer by Rev. A. A. Morrison, of Portland. The retiring President, Dr. Musser, then introduced Judge Meloin George, of the Supreme Court of Oregon, who represented the Governor in welcoming the visiting physicians to the State. Judge George said that in California they had elected a physician Governor and that there were many physicians in Oregon who should be Governor. He invited the visitors to stay for good in the glorious climate and the wonderful prosperity of Oregon which its citizens were too modest to try to keep to themselves.

Dr. Harry Lane, the Mayor of Portland, himself a physician, then added his welcome to the city. He told the story of efforts to improve the moral and hygienic conditions of Portland for the Exposition time and assured the doctors that they should be the welcome guests of the city and its citizens.

On behalf of the Oregon State Medical Society, its President, Dr. George F. Wilson, bade the visiting physicians welcome and hoped that they would appreciate the Exposition and the expansion of the State as well as transact their business and share in all the social functions.

Dr. Henry W. Coe, the President of the City and County Medical Society of Portland, then stated some of the reasons why the physicians should feel themselves welcome in the metropolis of the Northwest. When it was announced that the American Medical Association had resolved to come to Portland for their annual meeting, it was stated that at least $20,000 must be raised to provide proper arrangements for the meeting. Portland is not a large city, nor is it blest with many very wealthy men, but there was a prompt response to the call for funds. Three thousand dollars was subscribed by six physicians at the first meeting. When the inhabitants of the city were told that an effort was making to secure the meeting of the most important scientific body of this country, or perhaps of the world, the response was prompt. Before the opening of the session $23,000 was in bank to defray the expenses.

Dr. Mackenzie then announced the social features of the meeting: The reception at the American Inn on the Exposition grounds on Tuesday evening. The reception at private houses as well as that to Dr. McMurtry, the President of the American Medical Association, on Wednesday evening in the Oregon Building, and the trip down the river on Thursday. The reception at "The Oaks," given on Thursday evening by the Portland City and County Medical Society, assisted by the District and State Medical Societies. Finally the trip arranged for members to Alaska, to be taken just after the close of the meeting; as well as the Friday morning trip up the Columbia River.

Dr. Musser then presented Dr. Lewis S. McMurtry, of Louisville, Ky., the President-elect of last year, who delivered the President's annual address (See page 97).

SECTION ON PRACTICE OF MEDICINE.

FIRST DAY—JULY 11TH.

The Chairman of the Section, Dr. Richard C. Cabot, of Boston, in the chair.

The scientific business of the session began with the reading of a paper on "The Incidence of Heart Disease in San Francisco," by Wm. Fitch Cheney, of California.

Statistics of Heart Disease.—Dr. Cheney analyzed 135 cases of heart disease that had been under observation in an out-patient clinic. By far the most frequent lesion seen was that of the mitral valves causing insufficiency. After this came aortic insufficiency and then mitral stenosis in some nine cases. Only patients above twelve years of age were received at the clinic, or it seems not unlikely that increase of uncomplicated mitral disease would have been seen. Most of the patients under observation were under twenty years of age and all were under thirty years. It is particularly in early life that acute articular rheumatism and other infectious diseases cause mitral thickening with stenosis. Most of the aortic disease was seen in those suffering from arterial disease, and Dr. Cheney called attention to the fact that aneurisms of the aorta are especially common in San Francisco.

Etiology.—In valvular disease the most common cause was evidently rheumatism. This was not a common factor in myocarditis, however. Most of the cases had suffered from recurring attacks of rheumatism and some were in the midst of a relapse into rheumatism when they came under observation. Race and sex seem to have an influence in predisposing to heart disease only inasmuch as they influence the habits of the individual. Three-fourths of the patients were foreigners, but these are the hard workers who, besides neglect hygiene and overindulgence in alcohol and tobacco. Very few hard workers who are careless in their habits escape aortic disease. Less than one-third of the cases occurred in women, showing the influence of their quieter lives. The particular occupation seemed to bring with it liability to heart disease, though hard work is an important factor.

Septic Arthritis and Vulvulitis.—Dr. Ophüls. of California, in the discussion, said of Dr. Cheney's paper, that in making the autopsies on some of these cases the most prominent feature was the frequency of septic conditions. Some of the valve lesions were of distinctly ulcerative character, though the clinical diagnosis had been rheumatism. It seems probable that many cases in which endocardial complications occur that have been called rehumatism are really of septic origin. True, simple articular rheumatism, simple arthritis, may run its course without the occurrence of bacteria in the joints and consequently without danger of heart complication.

True and False Rheumatism.—Dr. James J. Walsh, of New York, said that no movement in medicine at the present time is more interesting than the separation of so-called rheumatism into its constituent diseases. The best sign that true rheumatism has been present is that it leaves no mark in the joints. When the joints are permanently injured then either the disease was not simple rheumatic arthritis or it was complicated by some accessory bacterial infection. Septic arthritis is undoubtedly much commoner than has been thought. Gonorrheal rheumatism is quite frequent. The heart valves are really joints in the tissues, covered with serous membrane, to prevent function and adhesion. We should not expect them to suffer permanently from true rheumatism any more than the joints. Where endocarditis occurs there must be the suspicion of a complication in the case. Rheumatism, as now used in medicine, is a multiplex term covering many different affections, of which any simple arthritis really deserves the name. Proper limitation will bring progress in diagnosis, and improved methods of differentiation will lend further precision to our efforts.

Hard Work and Aortic Disease.—Dr. Grandee, of Norfolk, Virginia, said that many of the negroes who work about the docks at Norfolk suffer from heart disease. They are not especially liable to rheumatism but, on the contrary, suffer from the disease rather infrequently. Many complain of the vague pains commonly called chronic rheumatism, but have no history of an acute febrile disorder with swollen joints. Their pains are nervous in character or are myalgic. They are all truckers, that is men who do heavy lifting around the docks, and their heart disease is evidently due to the strain put upon the valves. It is rather of traumatic origin than the result of spreading arteriosclerosis.

Secret Nostrums.—Dr. Frank Billings, of Illinois, called attention to the large number of secret nostrums, copyrighted preparations, that are advertised in the medical journals of this country and, as advertising costs money, are evidently prescribed by the American medical profession. The real patented preparation may have an ethical place. The patent is granted for some feature of the manufacture. This is protected only for seventeen years, while the copyright affords protection indefinitely. It is evident to any right-minded physician that these secret nostrums should not be prescribed, yet thoughtlessly and through inaction they have secured a great vogue.

Cause of Evil.—Dr. Billings considers that the cause of the evil lies in the deficient teaching of pharmacology and therapeutics. Altogether too little is said of treatment and there is no practice in prescription writing. While diagnosis, bacteriology, and pathology with anatomy and physiology are occupying so much time, the claims of pratical medicine are neglected. Too often a drug nihilism is the spirit of the medical teaching. Students should be taught insistently the value of single remedies and of simple combinations. Only by this will the root of the present evil, which is fastened in ignorance and nourished by the disinclination to think, be effectively reached. Meantime there are certain fomenters of the soil that can be made less fruitful of harm than at present.

Unethical Medical Advertising.—Most of the medical journals that come to the doctor's desk contain these nostrums advertised. The reputable pharmacists taught the lesson of calling exaggerated attention to the effectiveness of their preparations and the nostrum manufacturers followed suit and went them several better. One-half of the medical journals would go out of existence if such advertising were stopped. They could well be done without, however. At present most of the journals represent not the profession nor their editors, but their advertisers. This must be stopped if a serious evil is to be eradicated.

Dr. Musser, in opening the discussion, said that skepticism in therapeutics, especially in the use of old-time remedies, is undoubtedly responsible for much of this evil. A definite return to the prescription of old-fashioned remedies, even the so-called galenicals, would do away with this. Meantime the movement to lessen the prominence of the nostrum evil and the shame of their advertising must be encouraged in every possible way.

Resolutions.—Dr. Alfred Stengel, of Philadelphia, said that the American Medical Association now represents nearly 20,000 members. Some 15,000 more subscribe to the *Journal of the American Medical Association*. United effort on the part of all these would do much to wipe out the evil. He presented resolutions asking the House of Delegates to consider the matter and legislate for the evil. At the request of Dr. McCleve, of California, a supplementary resolution requesting the board of trustees to remove the advertisements of all nostrums from the *Journal of the American Medical Association* was added.

The Profession to Blame.—Dr. J. J. Walsh, of New York, said that the low standard of true feeling for medicine in the profession was to blame for the evil. In New York, where the medical education is not deficient, statistics show that over 70 per cent. of all prescriptions written contain some nostrum. Inquiry at drug stores within a month after an agent comes around to introduce a new and hitherto unheard of preparation, shows that physicians have begun to prescribe it. The good senses of the profession must be aroused to the enormity of thus selling their birthright as practitioners of medicine to the pharmaceutical quacks for even less than the proverbial mess of pottage.

State and Association Journals.—Dr. Moore, of St. Louis, said that even the State and medical association journals are not free from the objection of catering to advertisers who have secret nostrums to sell. This of course perpetuates the evil. Some one has spoken of Dr. Billings' action in attacking secret nostrums as courageous, but is it possible that members of the medical profession would actually be afraid to express opinions in this matter? Are doctors not men first?

Dr. Priestly, of Iowa, said that medical students are not taught properly to prescribe and their laxity in taking up with these ready-made prescriptions is due to this.

Dr. Strickenfeld, of Utah, said that in St. Louis it was the custom for medical students about to graduate to go around to the secret nostrum houses, of which there are so many in that city, and get a stock of these pharmacals to begin practice on. After they exhausted the supply they sometimes came back to the city to replenish their stores gratis.

Dr. Witherspoon, of Kentucky, said that the true physician is a medical student all his life. The fact that he has not learned prescription writing before graduation should only make a renewed incentive to learn it after, if he has the true professional spirit. The blame must not be laid on the medical schools but the men. Nostrum prescribing narrowed their minds until at last it was impossible for them to advance in medicine.

Dr. King, of Washington, said that an evil cannot, any more than a plant, be killed by cutting off its head. The root must be got at. Medical education must be improved from its practical side. In the postgraduate schools diagnosis, pathology, bacteriology, are all insisted on. Treatment is scarcely mentioned. Hence physicians grasp at the will-o'-the-wisp with the promise in it held out by the oily manufacturing chemist.

Dr. Grosse, of California, said that the battle against the nostrum was in full tilt in California and he is glad to see it spread. Unfortunately even reputable medical journals publish the "ads." of these nostrum venders and the unsuspicious reader cannot but think they must have some virtue in them.

Dr. McCleve, of California, said that in condemning the medical journals that of the Association itself must not be passed over in silence. It also admits what are, to say the least, objectionable "ads." to its columns.

Dr. Stockton, of Buffalo, said that publicity will be of the greatest help in this struggle with the nostrum. The fact that names are mentioned publicly, as in Dr. Billings' paper, must result in good. The more complete the exposure the more will the profession realize the fraud.

At the suggestion of Dr. Carter, of Victoria, Dr. Walsh, of New York, offered a resolution that the set of resolutions with regard to the nostrums adopted at

this session should be transmitted to the Canadian Medical Association for consideration, inviting joint action in any measures that may be adopted to mitigate the evil. The resolution as also the previous resolutions for the house of delegates and the board of trustees were passed without a dissenting voice.

Nitric Acid Fumes Inhalation.—Dr. J. N. Hall, of Colorado, read for himself and Dr. C. E. Casper, of Denver, a paper describing in detail the effect of nitric acid fumes on the lungs in some 20 cases. The patients were firemen, called to put out a fire due to the breakage of a carboy of stray nitric acid. The acid was soaked up with sawdust which oxidized very rapidly and burst into flames in many places. For this the firemen were summoned and found a thick, irritating smoke evidently due to a combination of acid fumes with the burning sawdust. The acid was very concentrated, over 38 per cent. in strength and contained no noteworthy proportion of nitrous acid and no sulphur impurities.

Course of Symptoms.—The men were overcome much more rapidly than ordinarily by smoke and there was an intense feeling of irritation of the respiratory passages on first going near the flames and then immediately after coming out from the first effects of the collapse incident to exposure to the fumes. The men were taken immediately to the hospital, but thought no more of their condition than if they had been overcome by smoke, which is a common experience with them. All of them asked and were permitted to return to their homes after a few hours. All of them, however, without exception, were brought back to the hospital within from six to twenty hours, because of severe irritative symptoms in the respiratory mucous membrane and because of the development of intense congestion of the lungs. After their return to the hospital all suffered from vomiting and some signs of collapse, and all of them complained of sharp pains on breathing as well as difficulty of respiration. All of the victims suffered from pleuritic pains, which on investigation proved to be accompanied by pleuritic friction sounds so that the pleura was evidently affected. After the signs of active congestion passed areas of consolidation could be demonstrated here and there. This bronchopneumonia proved of slow course and very prostrating in its tendency. The general symptoms did not seem to be different from those noted after the inhalation of chlorine or other irritant gases. Four of the cases proved fatal, one not long after the accident, three others toward the end of the month afterward. These three had recovered apparently from their bronchopneumonia and then suffered a fatal relapse. At autopsy the evidence of bronchopneumonia was clear.

Milwaukee Cases.—Dr. Neilsen, of Wisconsin, said that two years ago a similar accident ocurred in Milwaukee, and the symptoms ran a similar course. All of the men went to their homes after a couple of hours and then had to return later on for treatment. The signs were those of intense congestion of the lungs, though at first there seemed to be only a superficial though troublesome irritation of the respiratory mucous membrane. All of the cases improved very slowly and the return to complete health was long delayed. Finally all of them had to be sent to Texas to recuperate. On the way one of them, discouraged by the slow progress of his case, committed suicide.

Absorption of Toxic Material.—Dr. McCaskey, of Indiana, said that some of the prostration and general symptoms as well as the failure to react seemed in these cases to be due to the direct absorption of toxic material into the blood during inhalation. This should be an indication for treatment in such cases. The vomiting seems to have been nature's protective effort to throw off some of this absorbed material, which could not escape through the congested lungs.

Non-Infectious Bronchopneumonia.—Dr. J. H. Musser, of Philadelphia, said that the most interesting phase of Dr. Hall's work is undoubtedly the demonstration of the possibility of the production of bronchopneumonia by direct severe irritation. In recent years only the infectious factors in the etiology of bronchopneumonia have been considered to the exclusion of other important sources of this inflammatory reaction. It is for the careful study of this subject in recent papers that Dr. Hall is to be especially commended.

Slow Poison.—Dr. Hall, in closing the discussion, said that there were some symptoms in the cases extremely difficult to explain. The vomiting scarcely seemed to be due to poison, however, since it did not occur at once but in from twelve to twenty hours or more after the exposure; it would seem as though some broken down tissue material were being absorbed which was giving rise to the prostration and vomiting. Poison acts at once, all the men went home and then, later, had to come back to the hospital.

On motion of Dr. Musser, the paper of Drs. James E. Talley and William S. Newcomet, of Philadelphia, on "Studies in Roentgen Ray Diagnosis," with special attention to the diagnosis of pathologic conditions within the chest, was read by title.

SECOND DAY—JULY 12TH.

SYMPOSIUM ON NEPHRITIS.

General Considerations on Pathology.—Dr. W. T. Councilman, of Boston, said that the principal anomalies are chiefly those of position. The kidney is situated lower than usual or it hangs more loosely. In the normal kidney there is great differentiation of tissue and function. One curious feature of the kidney is its capacity for repair and yet the little ability it displays for perfection of regeneration. While new form tissue will frequently be found here and there, and the tendency to its formation is quite marked, complete new kidney structure does not occur in this way. With advancing age there is considerable impairment of kidney structure, mainly due to destruction and degeneration of the true secreting tissue. Hand in hand with this there goes an increase of connective tissue. The true kidney tissue usually suffers first and there is the overgrowth of connective tissue.

Bacterial Infections.—The bacterial infections of the kidneys resemble in their effects the conditions produced elsewhere by microbes. The most common group of renal diseases are those produced not by microbes directly, but by certain soluble toxic substances produced by the growth of micro-organisms or by disorders of the circulation. Interstitial changes in the kidney are practically always secondary to injuries of the true secreting substance. The most important legions of the kidney are those which affect the glomeruli. These are affected alone or principally, the inflammation may be acute, subacute or chronic. It is possible to make broad classifications on the basis of the pathological and anatomical changes. These, however, do not stand the test of clinical observation. The future study of the diseases must be along clinical and experimental lines.

Albuminuria in Nephritis.—Dr. Alfred Stengel, of Philadelphia, insisted on the necessity of distinguishing nephritis in the pathologic sense from nephritis in the chemical sense, which is the Bright's disease of ordinary conversation. Much of the chronic interstitial nephritis that is due to arterial conditions must not be considered as true Bright's disease; the

kidney symptoms are indeed a local manifestation of the arterial condition. Consequently all of these cases were eliminated by Dr. Stengel in his study of the relationship of albumin to Bright's disease. Altogether the records of 581 cases have been analyzed. Of these, 107 cases showed albuminuria, so there was no true Bright's disease. They included such conditions as diabetes, pregnancy, the albuminaria of adolescence and of the terminal stages of various affections. In these circumstances the albumin present is an expression of other diseases rather than of nephritis.

Nephritis without Albuminuria.—In over 200 cases of true nephritis there was no albumin present at any time while the patient was under observation. Eleven of these cases showed the presence of casts. The test used was that by heat and nitric acid, and all of the testing was done by one person. This test is not as delicate as some of the other tests employed, but it has the decided advantage of not reacting on other substances besides albumin, nor to such small amounts of albumin as constitute the presence of this pathological material.

Albuminuria without Bright's Disease.—This was observed in a large proportion of cases, but the albumin was never in large quantity, and, indeed, it was usually said to exist only in traces. Another prominent feature was that it was unusually fluctuating, and never permanently present. There were, however, some exception to these rules. Occasionally albumin was present in quite large quantities without apparently having any pathological significance. One young woman presented for two years the large albuminuria, the large amount of albumin was present in the morning and never at any other time. She was warned of the necessity of exercising care with regard to every detail of life. She married and was warned with regard to the dangers of pregnancy in the presence of her kidney condition. After a time she became pregnant, but her pregnancy did not seem to have any deleterious influence upon her kidney condition. No eclampsia developed and no signs of any serious nephritic complication. Her labor was without incident. She had three children altogether, and at the present time there is no trace of albuminuria. In contradistinction to this fluctuating albuminuria is the constancy and uniformity of the albumin present in Bright's disease.

Infections and Albuminuria.—Nearly all the infectious diseases are accompanied by a distinct amount of albumin in the urine. Among those noted as producing this effect were such simple infections as tonsillitis, erysipelas, acute rheumatism, gonorrheal rheumatism, and, indeed, all of infectious diseases accompanied by fever. In 290 cases of typhoid fever, 83 showed the presence of a distinct amount of albumin in the urine. It would seem as though the waste of tissue during febrile condition gave rise to substances which, passing through the kidney, irritated it sufficiently to allow the escape of albumin, or that albuminous material was somehow absorbed and then excreted.

Cardiac Disease and Albuminuria.—In practically all advanced cardiac disease albumin is present in the urine. In 154 cases in which cardiovascular changes were present, 81 had albumin, and 72 none. The urine is variable in cardiac disease in content of albumin, but this corresponds as a rule to the cardiac sufficiency. When small amounts of urine are passed and the urine is rather concentrated, considerable albumin is likely to be present. On the contrary, when cardiac sufficiency has been established and the urine has become normal in amount, then the amount of albumin usually decreases. This ratio can be observed in nearly all cases.

Secondary Syphilis and Albuminuria.—Dr. Stengel has observed in most of the cases of secondary syphilis under his care and among the records of the medical service of the University of Pennsylvania Hospital that albuminuria is quite common during secondary syphilis. He has few opportunities for observation in regard to this disease, but considers an investigation of it from this standpoint would furnish important information. He is not sure that the albuminuria present is due to the secondary syphilis itself, or whether it should not rather be attributed to the too frequent use of mercury in the disease. Certain it is that in most cases, if mercury is employed in considerable doses, it proves an irritant to the kidney, causing congestion, and leading to the presence of albumin in the urine.

Conclusions.—Dr. Stengel considers then that while in general albumin casts in the urine are signs of kidney disease, they may occur without any affection of the kidneys. There are certain inflammatory conditions of the kidneys of very passing nature, which may cause albumin to be present in considerable quantities. When albumin is present in considerable quantities and constantly, then it has a definite pathological significance. The presence of a trace of albumin has sometimes been exaggerated into a pathognomonic symptom of Bright's disease. Dr. Stengel does not wish to lessen the value of urinary examinations, but considers that they must always be supplemented by careful clinical observation of other organs throughout the body. A larger view must be taken of the affections, and especially the importance of vascular condition must be realized if there is to be any proper idea obtained of the kidney condition and its relation to the general health.

Casts in the Urine.—Dr. Charles P. Emerson, of Baltimore, discussed the subject of the significance of casts. Epithelial casts are sometimes said to be most significant. They are, if they consist, as is sometimes the case, of fragments of kidney tubules which have been broken off and are excreted in the urine. Not infrequently the lumen of these tubules can still be seen, leaving no doubt of the origin of the cast and of the serious pathological condition at work. Most so-called epithelial casts are only hyaline casts, on which are gathered a few cells with round nuclei. Some of these cells, as has been emphasized by Dr. Cabot, are not surely of renal origin. Even if one cell clung to a hyaline matrix it would be sufficient to constitute an epithelial cell. Pus casts and blood casts are also said to be of special significance, but they occur often in temporary conditions, such as after severe athletic exercise, or after unaccustomed exertion.

Showers of Casts.—In certain conditions there occur what has been described by the very picturesque term of "showers of casts," a sudden elimination in the urine of a great many casts. In diabetes the occurence of a shower of casts indicates the diabetic coma is about to assert itself. Many of these casts are of finely granular character, and sometimes there has been no preceding sign of kidney trouble. It is sometimes said that fine granular casts are a stage of nephritis subsequent to coarsely granular casts. This observation in diabetes seems, however, to disprove this. True hyaline casts are much rarer than they are reported. It requires careful adjustment of the light of the microscope to enable the observer to see them. They are almost exactly the color of the fluid, and escape observation.

Other Forms of Casts.—Waxy casts are not so infrequent as has been imagined, though their significance is not clear. When they are yellowish they look exactly as if they were composed of beeswax. The

lighter-colored ones remind the observer very much of paraffin. Fatty casts occur frequently in the nephritis due to malaria. How serious may be the significance of waxy casts may be gathered from the fact that they can be best observed in the urine of bladders abstracted post mortem. It seems not unlikely that some serious agonal condition is responsible for them toward the end of life.

Casts without Nephritis.—In 11 cases in which casts were present leading to the diagnosis of nephritis the autopsy showed only a chronic passive congestion. The autopsies were very carefully made and there was no sign of nephritis, either macroscopically or microscopically. In 23 cases in which casts were rather abundant in the urine, only cloudy swelling was found to be present post mortem. It is not as yet decided whether this represents a stage of inflammation, but certainly the kidneys in these cases could not be considered to be suffering from true nephritis.

Acute Nephritis of Casts.—Casts are most abundant in acute nephritis. In these cases epithelial blood and pus casts are most common, though after a time coarsely granular casts are found, only later do the finely granular casts occur. Acute exacerbations of chronic kidney disease presents the same picture as acute nephritis and an abundance of casts. On the other hand, in chronic nephritis casts become much rarer. In the large white kidney, representing chronic interstitial nephritis, the larger the kidney the more the casts. In the large and small red kidney of arterial sclerosis casts are rather infrequent, and are not especialy significant. Amyloid disease was present in 18 cases under observation at Johns Hopkins. Most of these presented few casts, two of them had no casts at all, though in nine cases altogether the casts were important. In two cases waxy casts were present, but very few casts showing the true amyloid reaction.

Conclusions.—Casts predominate then in acute conditions of the kidney. The better the condition of the kidney just before the irritant enters it, which causes the casts, the more casts will eventually be present. In diabetes without preliminary nephritis, there may be a shower of casts with an enormous number of them, and any diffiuse kidney condition due to irritation may produce a like effect. Athletes, especially bicyclists, foot runners and oarsmen, often have a large number of casts in their urine just after they have undergone severe exertion. The kidney seems after a time to get used to the irritant present in the system, and then the casts cease to appear. The sudden exertion produces materials which irritate the healthy kidney into a reaction that looks like a pathological condition.

Irritant Substances and Casts.—Certain foodstuffs, as asparagus, seem to have a definite tendency to give rise to casts in the urine. Most of the spices, and especially mustard, has this same effect. On the other hand, salicylic acid, even in ordinary doses in susceptible subjects, may give rise to casts. In one person under observation at Johns Hopkins Hospital, the presence of casts seemed to be a hysterical manifestation, though they have been seen at intervals for many years no serious effect has followed, and it would seem as though the condition which they represented was not distinctly degenerative nor progressive.

Puerperal Eclampsia in Relation to the Kidney.—Dr. Philip King Brown, of San Francisco, has studied the analyses of 54,000 births. In 105 of these births some symptoms of eclampsia developed. Most of them were hospital cases, hence the proportion of eclampsia is higher, for many of the patients were admitted to the hospital because of the development of eclamptic symptoms. In 18 per cent. of all these eclampsia cases true nephritis was not present, but only renal irritation. The connection between the kidney and eclampsia is by no means as clear as used to be thought, and the fact that albumin in casts frequently appear during pregnancy, does not at all necessarily signify that nephritis is developing. The strain the kidneys are undergoing resembles that which they are subjected to in the severe exertion of athletes, and so it is not surprising that casts and albumin should be present.

Contributing Factors to Eclampsia.—Dr. Brown calls attention to the fact that thyroid enlargement is quite common in pregnancy, and this seems to be due to the fact that greater calls are made on the functions of this gland, which it is sometimes not able to meet except by hypertrophy. At times sufficient thyroid substance is not prepared, and consequently an intoxication results. Dr. Brown has found that according to certain observers, if one-fifth of the thyroid glands be removed from pregnant cats, attacks develop which are not unlike those of eclampsia. As a matter of fact the only connection between the kidney and eclampsia has been the similarity of eclamptic attacks to uremic seizures.

Decrease of Urea.—Dr. Brown calls attention to the fact that the ordinary observations on the amount of urea in cases where eclampsia is threatened are not likely to be of much service. In certain quite normal cases there is a decrease of the urea toward the end of pregnancy. The present methods of estimating urea do not give sufficiently definite information. The reduction in urea excretions by no means indicates a danger signal.

Other Theories.—There are other theories as to the origin of eclampsia. The most prominent are those which associate with changes in the liver and in the placenta. In quite a few cases the changes in the liver found in eclamptic subjects have been quite as marked as those found in the kidneys. Animals with hepatic fistulæ have not infrequently suffered from an intoxication resembling uremia. Hence the supposed connection of the liver with eclampsia. With regard to the placenta, recent observations seem to show marked change in that organ in patients who have died from eclampsia. The serum of the child in eclamptic cases is hemolytic for the maternal blood. It would seem as though certain affections of the placenta might be reflected in the mother's condition. Some observers have considered eclampsia due to a general disturbance of metabolism. Just as the diacetic acid causes diabetic coma, so some as yet unknown substance in the circulation may cause eclampsia.

Muscular Irritability—Personal Observation.—Dr. Brown has found that the muscles of pregnant guinea-pigs are much more excitable than those of animals under ordinary conditions. Irritants which produce no effect at all on the muscles of non-pregnant animals will set the muscles of the pregnant animal in a state of spasmodic contraction. It would seem that this is a contributing cause to the eclamptic convulsions. The muscles of the pregnant woman are much more irritable to irritants of almost any kind, and consequently the convulsions occur.

(To be Continued.)

SECTION ON SURGERY AND ANATOMY.

FIRST DAY—JULY 11TH.

Chairman's Address.—Dr. Maurice H. Richardson, of Boston, Mass., referred to some of the accidents and mistakes in surgery and gave a number of instances of errors, particularly in diagnosis, occurring to himself personally. He called atten-

tion to the fact that the surgeon is blamed for everything that goes wrong in patients coming under his care, regardless of who might be responsible. He urged that all recent graduates should spend a number of years assisting prominent surgeons before branching out for themselves, being careful, however, to avoid becoming thereby such chronic students that they lost confidence in themselves.

The Cure of Hernia.—Dr. H. O. Marcy, of Boston, Mass., read this paper. In it he traced the history of the modern operation for the cure of hernia from its beginning, giving his own experiences of the use of the buried animal suture for the reconstruction of the inguinal canal through the abdominal wall, restoring it to its normal obliquity. This it was not possible to carry into effect without the use of buried sutures. As Mr. Lester's first American pupil Mr. Marcy had been taught the use of the buried animal ligature, as recommended by this great master for the occlusion of the arteries both in continuity and in amputations. It was but a logical sequence to broaden the use of the animal ligature and apply it to the reconstruction of divided structures. This was the inception of the buried animal suture and had its first application for the cure of hernia in 1870. Since 1882, when he used the kangaroo tendon suture, he has used exclusively this surgical material. Although not universally adopted, the kangaroo tendon suture is, he believes, for many reasons considered the best. The cause of inguinal hernia in the male is more commonly found in the lack of the developmental processes of infantile life. Here not seldom the structures about the internal ring are defective, permitting a direct intra-abdominal pressure resulting in hernia. The cure is found in the restoration of these parts to their normal condition. There are many modifications of the operation of minor character, the results of which are excellent, but the fundamental physiological basis of the operation must ever remain.

Fibroid Growths of the Abdominal Wall.—Dr. C. A. Powers, of Denver, Colo., referred to the infrequency of these so-called dermoid tumors, and stated that they generally occurred in women from twenty-five to thirty-five years of age, who have recently been pregnant, and most often in the region of the right rectus muscle below the naval. He considered at some length the etiology, form, size, pathology, development and course, and also the symptoms, diagnosis, management and the immediate and remote results of operations. Postoperative hernia and relapse of growth was referred to, together with a review of the literature on the subject, and of the author's cases.

Dr. R. F. Weir, of New York, reported having seen two cases similar to those referred to by Dr. Powers.

Dr. Rixford, of San Francisco, reported one similar case; Dr. McGlennon, of Baltimore, Md., reported another, as also did Dr. Connell, of Fon du Lac, Wis., who had seen two cases; Dr. Willoughby, of Los Angeles, and Dr. Fulton, of Astoria.

The Chairman referred to the effect of Dr. Coley's serum in cases such as those reported, and claimed that he had seen considerable benefit result from this treatment.

Splanchnoptosis from a Surgical Standpoint.—Dr. James E. Moore, of Minneapolis, Minn., stated that there was great confusion in the use of terms that applied to ptosis of the abdominal organs, splanchnoptosis being, probably, the best general term. Glenard, in 1885, gave the first good description of this condition, and claimed that splanchnoptosis included all of the abdominal organs and that it never occurred without serious digestive troubles. The causes of splanchnoptosis are not well understood. The symptoms vary according to the organ or organs most affected, but in a general way they are those of neurasthenia. A patient suffering from this train of symptoms should never be pronounced dyspeptic, hysteric or neurasthenic and be sent away with a prescription without having a most careful physical examination made. Hepatoptosis is much more frequently involved than we have heretofore believed, and when the liver is prolapsed all of the other organs must come with it because of their anatomical relations. Glenard said that splanchnoptosis is incurable, but he recommended medical treatment and the abdominal binder only. The fact that operations for ptosis of the various organs can be done almost without mortality gives us no license to operate indiscriminately, but it entitles these sufferers to the help of surgery. When a patient comes in consultation with this motely array of symptoms some one of the organs should not be picked out, but a thorough diagnosis and a complete operation should be made. The relative frequency and importance of ptosis of the various organs depends upon the observer's viewpoint. When the internist, the neurologist, the gynecologist and the surgeon gain the same viewpoint all will be in a position to accomplish the most good. Surgery should not be recommended in these cases until intelligent medical treatment has failed, but the latter having failed it is the surgeon's duty to operate. Surgery cannot be offered as a panacea, because there is a possibility that neurasthenia may continue after all mechanical defects have been repaired. Past failures are largely due to incomplete operations. The shortening of suspensory ligaments alone is liable to result in failure, because they were surely not intended by nature to bear the weight of these organs. Attention must be given to the support from below. It is still a moot point as to whether a prolapsed organ or neurasthenia, when found together, is the primary condition, because each of these conditions may exist without the other, but the cure of the prolapse will ofttimes cure the nervous condition. Any operation in which a direct attachment of the stomach is made to the abdominal wall is bad surgery. The application of the gastrohepatic and gastrosplenic omentum is theoretically good, but the frail tissues may not hold. After a failure from this cause the writer made an anastomosis between the prolapsed colon and the sigmoid, which resulted in a complete cure. Gastroenterostomy is the best operation for a dilated stomach when dilatation is not due to atony. Recent experiences have taught that hepatopexy is a safe and satisfactory operation. A number of mattress sutures of chromic catgut or kangaroo tendon are passed from below upward through the liver about one and a half inches from its margin, then through a good bite of the soft parts underneath the costal cartilages, then downward through the liver again so that the knots can be tied below when the liver is held in place. All sutures should be passed before any are tied. These are undesirable patients because of their extremely stormy convalescence, but the immediate prognosis is good, and, while experience as to end-results is too limited to draw definite conclusions from, it is so far sufficiently encouraging to justify the belief that one may be able in future to restore to health and usefulness many who have heretofore been condemned to hopeless invalidism.

Dr. Coffey, of Portland, showed a number of illustrations, giving a very good idea of some work he had done along this line, one of the most important illustrated the various methods in which the abdominal organs are suspended.

Early Diagnosis of Gastric Ulcer.—Dr. H. D. Niles, of Salt Lake City, took up the relative frequency of the different symptoms of this affection and the various diseases resulting therefrom. He advised the grouping of these symptoms before making a positive diagnosis and deciding on exploratory incision.

Clinical Experiences With the Use of the McGraw Elastic Ligature.—Dr. A. J. Ochsner, of Chicago, described his operation, which is an elaboration of the original enclyran ligature in detail, and gave the results obtained in several cases.

Chronic Ulcer of the Stomach and First Portion of the Duodenum, with Especial Reference to Operative Treatment.—Dr. William J. Mayo, of Rochester, Minn., in this paper, stated that clinical observation as to the frequency of gastric ulcer gives from 1/12 to ½ of 1 per cent., while post-mortem examinations show 1½ per cent. in America to above 5 per cent. in Europe. Duodenal ulcer has not been closely observed either clinically or at post-mortem. At the operating table the duodenum has been found to be involved in more than one-quarter of the cases, and in more than one-half of these subjects there were no gastric complications. Of nearly 800 operations upon the stomach and duodenum in the hands of Dr. Chas. H. Mayo and the writer, nearly 450 were for ulcer or some of its numerous complications. Medical cures shown by statistics to be from 20 to 40 per cent., but like attacks of recurrent appendicitis or gall-stone colic, subsidence of acute exacerbation may not mean cure. In two and one-half years, 280 gastric and duodenal ulcers operated at St. Mary's Hospital, 231 were subjected to gastrojejunostomy, 119 males, 112 females. Of 231 cases, 60 involved the duodenum. Mortality of the last 140 gastrojejunostomies was less than 3 per cent; last 80 but one death. Two clinical groups should be distinguished. (1) Surgical or pathological ulcer, involving all coats of stomach or duodenum, and easily recognized from exterior of organ, and at least two-thirds occur in males. (2) Medical or clinical ulcer involving only mucous coat, and not indicating location without examination of interior of gastric cavity more numerous in females. Operation is not indicated in the prolapsed, dilated stomach due to the neurasthenic state, in atonic dilatation, nor in acute ulcer, unless for complication (perforation, hemorrhage, etc.). The author said he would advise and practice operation in cases with obstruction, the results of ulcer, and in cases in which prolonged medical treatment has failed to cure an active or relapsing ulcer. Gastrojejunostomy made by suture between the posterior, inferior wall of stomach and jejunum within three inches of origin (no loop) gives best results. Excision of ulcer, Finney's and Rodman's operations have an increasing field of usefulness.

Dr. Ochsner took up the question of the Finney operation and also the Moynihan operation.

Dr. Mayo also referred to the Finney operation and particularly to the interesting statistics of Dr. Francine.

Acid Intoxication and Late Poisonous Effects of Anesthetics.—Dr. A. D. Bevan, of Chicago, called particular attention to the effect of chloroform on the liver, and stated that it was a frequent cause of death some days after anesthesia, the condition being as definite a pathological entity as acute pancreatitis, or phosphorus poisoning. The changes are in many respects similar to the acute cell-poisoning induced by arsenic.

Dr. H. C. Moffitt, of San Francisco, gave the details of six cases which he believed had died from the effects of chloroform.

Dr. Woods Hutchinson, of Portland, felt that Dr. Bevan's paper would be a great aid in assisting toward the development of the newer views regarding the functions of the liver, and more particularly in their relationship to various types of suboxidative intoxications.

Perforations in Typhoid Fever.—Dr. Richard H. Harte, of Philadelphia, reported a number of cases in support of his thesis that a surgeon should always be on hand in all cases of typhoid fever; and urged that he should be called in earlier by medical men, particularly in those cases in which perforation was to be feared.

Dr. Lawrence Litchfield, of Pittsburg, asked if Dr. Harte referred to local or general anesthesia, and also as to whether or not any observations were made with a view to determining blood pressure.

Dr. Charles A. Powers, of Denver, Col., commented on the excellent results of Dr. Harte's previous work along this line.

Dr. Manges, of New York, called attention to the importance of a fall in the temperature and an increase in perspiration as diagnostic features of the occurrence of perforation.

The author replied to Dr. Litchfield's inquiries by stating that he referred to general anesthesia, and that he had had no experience on the question of blood pressure.

SECOND DAY—JULY 12TH.

A Clinical Chart for the Record of Patients in Small Hospitals.—Dr. George F. Wilson, of Portland, Ore., read this paper, and stated that on account of the scarcity of clerical help in the small hospitals throughout our country no record of scientific work is preserved. A simple form of chart, prepared as such, without the necessity of being copied into record books, offered for suggestions and improvements, that such work could be preserved in an accessible form.

Dr. Wright, of Salt Lake City, considered the chart was too large, and that the spacing was not satisfactory.

Dr. Harry M. Sherman, of San Francisco, objected to the necessity of writing on both sides and to the fact that the chart was to be kept by some one other than the physician himself.

Preliminary Report of a Statistical Study of Tetanus.—Dr. James M. Anders and Dr. Arthur C. Morgan, of Philadelphia, read a paper on this subject. They undertook a study of the literature from 1850 to 1904, covering the reports of cases found in the Index-Catalogue of the Library of the Surgeon-General, in Washington, from 1850 to 1892, and the Index Medicus from 1892 to 1904 inclusive, or 949 cases, with a report of 252 original cases collected by themselves from direct correspondence with hundreds of observers all over the country, giving a total of 1,201 cases. These collective investigations afford convincing proof that in every case of the disease the tetanus bacillus is introduced into the body through a lesion of the skin. Their observations concerning the distribution and prevalence of tetanus in the United States gave rather misleading results, and hence they adduced tabulated reports from the Census Statistics of the United States, ex-

tending over a period of thirty years. The figures are impressive as showing the appalling mortality from tetanus of the newborn. Their statistics showed that while Fourth of July tetanus is vastly on the increase, in general the disease has been on the decrease as compared with the population. They found out that there is a strip of land, extending from the village of Oceanic, New Jersey, on the east, to the west of Red Bank, on the west, the said strip being about one mile wide and five miles long, where tetanus is strongly endemic. The incidence of the disease is influenced by the seasons, and while Fourth of July is on the increase, independently of this fact, the statement holds true that tetanus is more prevalent in the hotter as compared with the colder months of the year. The cases were tabulated with reference to the age; the disease is most frequent in the young, or before the twenty-fifth year. Males made up 79.3 per cent. of 981 cases in which the sex was noted. An interesting table, showing the infection areas, was presented; it showed that the extremities, notably the hands and feet, are the most common sites of infection. There is evidence to show that tetanus is directly transmissible. In their tabulated cases, several interesting clinical features were brought to light. In one case the trismus was so great that the teeth were crushed down to their roots, and in another the spinal processes of the vertebræ were fractured by the severity of the convulsions. Leucocytosis was noted in one instance, and it was thought that this symptom might be more common than is generally supposed. In one case the patient had a temperature of 1° F. every day during the period of incubation, and the writers suggest the importance of recording the temperature in suspicious cases, in order to determine whether there is any connection between a slight febrile movement and tetanus. In three cases the first symptom noticed was pain referred to the diaphragm; in another the diagnosis of hydrophobia was maintained for several days. In nearly all cases in which serum was injected cutaneous rashes, more especially urticaria and erythema, were noted. Their studies indicate the high diagnostic importance of the constancy of the tonic contractions in tetanus, since in other conditions, which simulate this disease, as hysteria, uremia, and strychnine poisoning, the contractions are intermittent. A table showing the incubation period and its relation to the mortality-rate embraced some interesting points. It was especially observed that the cases showing a short incubation period gave a high mortality-rate, while those that developed late, (*e.g.*, after the fifteenth day), gave a much lower death-rate. Another tabulation indicated the duration and its relation to the death-rate. No new facts were developed with reference to the treatment. There is uniform agreement that the immediate radical treatment of all wounds, followed by the local use of the dried serum, and this in turn by prophylactic injections of the antitoxin, preferably subcutaneously, is the best known method of treatment. Finally, in fully developed cases of tetanus, antitoxin does not have any appreciable beneficial effect.

Dr. L. L. McArthur, of Chicago, called attention to the importance of the early diagnosis of cases of tetanus, and said that in Chicago it had been the custom to administer antitoxin to patients in whom tetanus was likely to develop before receiving the report of the bacteriologist of the positive findings of the organism.

Dr. McCaskey, of Fort Wayne, Ind., objected to the method of serum injection before a positive diagnosis had been made, and felt that the thorough cleansing of the wound was all that was necessary.

Dr. Walsh, of Erie, reported a case of death from tetanus, although thoroughly treated by him within an hour of the accident.

Dr. Anders closed the discussion by arguing in favor of prophylactic treatment.

Cysts of the Spleen.—Dr. W. A. Bryan, of Nashville, Tenn., read this paper, and said cysts of the spleen rarely occurred without similar lesions elsewhere. They are classified as (1) dermoid, one case reported by Andral; (2) simple, serous, or blood cysts; (3) echinococcus cysts. He stated that cyst walls were fibrous tissue with more or less unstriped muscle fibers, with or without endothelial lining. The contents varied with the type of cyst. Small cysts produced no symptoms. Large cysts, he stated, produced symptoms of their size and weight. Begun in left hypochondrium, movable unless adhered, fluctuant, pain in left hypochondrium, epigastrium and left subscapular region. Nausea and vomiting might occur and rarely obstructive symptoms. Hydatid thrill absent in 50 per cent. of echinococcus, and found at times in ascites and ovarian cysts. Splenic cysts must be differentiated from abscess of spleen, ovarian cysts, growths of the pancreas, hydronephrosis, mesenteric cysts, and enlargement of the spleen from malaria and leucemia. The history, the point of origin, direction of growth, the rate of uniformity of growth, or its absence, together with collateral symptoms and signs now and then make a diagnosis possible. Cyst of a wandering spleen would present great difficulty of diagnosis.

The terminations of cysts of the spleen are by absorption, abscess formation, rupture into a viscus, or into the pleura or abdominal cavity, where the fluid is capable of producing numerous cysts of the peritoneum echinococcus.

The treatment is to open and drain or do splenectomy. Do not excise part of spleen; do not aspirate.

Indications for the Removal of the Pathologic Spleen.—Dr. B. D. Davis, of Omaha, reviewed the recent physiology of the spleen; the several pathologic conditions suitable for splenectomy; splenic anemia, malarial spleen, sarcoma; tuberculosis and abscess. He reported a case of successful splenectomy, and gave the clinical blood and pathologic findings.

Dr. Charles A. Powers, of Denver, had operated on several cases of cyst of the spleen and had been fortunate in having little or no bad results; whereas diagnosis was difficult, operations were not.

Dr. H. G. Marxmiller, of Cincinnati, considered that the subject should be divided into the medical and the surgical spleens, and advised the examination of a dried specimen of blood before operating.

Drs. McDonald, of San Antonio; Jepson, of Iowa; Griffith, of Kansas City, and others, reported histories of cases.

Dr. Davis closed by calling attention to the blood variations before and after operation.

Lip Operation for Cancer and Deformity, with Report of Cases.—Dr. W. W. Grant, of Denver, Col., described in detail a new operation for carcinoma of the lips and deformity of the mouth, which he claimed was superior to the ordinary operations for these conditions.

Cervical Esophagectomy: Report of a Case with Prothetic Appliances.—Dr. Wallace I. Terry, of San Francisco, Cal., in this paper claimed that the involvement of the cervical portion of the esophagus

was secondary to the epithelioma of the larynx. He reported having done a previous laryngectomy with resection of the esophagus and removal of the submaxillary glands, epiglottis and thyroid gland, and described the technic of the operation and the prothetic appliances for feeding and phonation.

Cancer.—Dr. William L. Rodman, of Philadelphia, considered that cancer was increasing in frequency; that the parasitic theory has not been proven; that the weight of evidence was against it, and that prolonged irritation was seemingly the most reasonable cause. The general belief that benign growths frequently undergo cancerous change, if we excepted superficial warts and moles, he claimed could not be proven, as it was of infrequent occurrence, while sarcomatous change was more frequent. He stated that prognosis varied with the variety of growth, age of patient, etc., and that diagnosis should be made as early as possible, supplementing the ordinary clinical means by microscope if necessary. The only safe treatment, in his opinion, consisted in free and early excision. Whereas, superficial squamous epitheliomata may be treated successfully by caustic and X-rays, other varieties were more often made worse instead of better by such treatment. Where it could be shown that a precancerous stage existed, operation should be done at once, but it was at first necessary to show that it existed, and impressions should not be accepted as facts.

Dr. Levings, of Milwaukee, called attention to the apparent relation existing between tuberculosis and cancer and gave instances of families where this seemed to have been proven.

Dr. Jacob Frank, of Chicago, mentioned a case similar to Dr. Terry's, on whom he had operated for carcinoma of the larynx, and in whom the remarkable result was obtained of the patient being able to articulate loud enough to be heard by everybody in a room with a seating capacity of three hundred.

New Method of Incising and Suturing the Liver to Re-establish Its Continuity, and for the Control of Hemorrhage.—Dr. Jacob Frank, of Chicago, described his method of operating, particularly in the controlling of the hemorrhage. He stated that his chief object was to bring his flaps together, and obliterate all dead space, as this re-established the continuity of the liver surface, and left no raw surface nor ragged edge.

Gall-Stones in the Common Duct.—Dr. W. D. Haggard, of Nashville, Tenn., mentioned a number of cases on which he had operated, and looked upon stones in the feces as an indication for operation. He considered that operation in the presence of prolonged jaundice was dangerous, and mentioned a number of differential points between tumor and stone obstruction.

Non-Calculous Cholecystitis.—Dr. Davis S. Fairchild, of Des Moines, Iowa, called attention to the number of cases operated upon for gall-stones where no stones were found. In addition, he mentioned that practically no changes were sometimes observed in the appearance of the gall-bladder, in spite of the supposed gall-bladder disease.

Dr. McLaren, of Minneapolis, said that hemorrhage following operation for gall-stones was not always to be feared, although it possibly should never be forgotten. He believed, further, that the presence of stones in the feces indicated that they were almost always associated with stones in the common duct.

Dr. Porter, of Fort Wayne, Ind., reported a history showing that the patient had been well for ten years following an attack of gall-stone colic. He finally came to operation for the relief of biliary obstruction.

Dr. A. J. Ochsner, of Chicago, called attention to the important points in Dr. Frank's paper: (1) the importance of making distinct flaps; (2) the clean surface, and (3) the care required in closing the liver wound. He said that acute obstruction of the common duct was no longer operated hastily as in times gone by, and he thought of late greater success had attended the operation as a result.

Dr. William J. Mayo, of Rochester, Minn., spoke in favor of Dr. Frank's method of controlling hemorrhage in liver surgery, and added that the injection of hot water into the liver was very beneficial for the same purpose. He urged the necessity of carefully differentiating one's gall-bladder cases, and said that one could never be sure a case of gall-bladder was going to do well. He spoke concerning the very irregular relation between jaundice and pain. Jaundice in particular often being very variable in intensity, or even in its actual occurrence.

Dr. J. J. Hamilton, of Idaho, reported an interesting case of gall-bladder disease. The patient operated upon himself without an anesthetic, removed six stones, and made a good recovery.

Dr. Frank, in closing, believed it was possible to readily control hemorrhage and liver operations, and urged that liver surgery should be put on a plane with appendicitis.

Dr. Haggard closed by stating that he was always dubious about accepting the statement of a patient that they had passed gall-stones unless they could produce them.

(To be Continued.)

SECTION ON DISEASES OF CHILDREN.

FIRST DAY—JULY 11TH.

The Teaching of Pediatrics.—Dr. John Lovett Morse, of Boston, the Chairman, began his address with a general description of the methods of teaching now in use in the Harvard Medical School. In brief these consist of lectures and laboratory work, on the now well-known concentration plan, during the first two years, the addition of the basal facts in the practical aspects of medicine with preliminary clinical work in the third year, and a fourth year of clinical work on the Elective System. In the fourth year, as well as in the clinical work of the third year, the students are divided into sections so that an average of about one instruction to every four or five students exists. The Pediatric Department controls the material in the Children's and Infants' Hospitals, and in the Infectious Department of the Boston City Hospital. The instruction in the third year consists of lectures, clinical lectures and instruction in case taking. The instruction does not always cover the same ground from year to year, but certain subjects of supreme importance, as diseases of the digestive system and the heart and lungs, are always taken up. The system of case taking consists in presenting to the students a variety of typewritten descriptions of actual cases which he is required to read up and diagnose. The students of the fourth year take one or more courses in pediatrics, lasting a month each, during which each student assists in the ward work, studies special cases or groups of cases and is encouraged to do original work. Postgraduate courses are given at certain times of the year. Dr. Morse emphasized the necessity of making pediatrics a special department, independent, and taught by specialists; only under such a system can the specialty be adequately taught. He also empha-

sized the necessity of leaving the clinical work of the third year to the end of the year and devoting the beginning to grounding the student in the anatomy, physiology and pathology of childhood. He suggested that there is still room for the didactic lecture if this is not merely the repetition of a textbook, and also that the amphitheater clinic was useful for presenting those diseases which are externally obvious. The recitation method, he stated, has been of little value in his hands. The necessity of endowing teaching positions was emphasized.

A Plea for National and Local Boards of School Hygiene.—Dr. Alice M. Smith, of Tacoma, made an appeal for a great extension of the present methods of medical school inspection. She suggested that the American Medical Association should take measures to establish national, State and local boards of school hygiene, with specially prepared physicians in charge. After commenting on the preventability of certain diseases, the financial loss from deaths, and the prevalent diseases due to faulty school hygiene, Dr. Smith outlined her plan for the prevention of the present conditions. Most of the existing bad conditions were ascribed to the ignorance of school boards, and of parents and the children themselves. Dr. Smith suggested as a remedy the formation of a national board having charge of the school hygiene and composed of non-partisan physicians, this board to cooperate with and instruct subsidiary State and local boards. The functions of the national board would be to provide plans for sanitary school buildings and school furnishings, to conduct civil service examinations for school physicians and janitors, and to publish leaflets of instruction from time to time. The State boards should have the power to choose proper sites for schools, to frame laws governing school hygiene and enforce them, to close unsanitary school buildings, to control the exclusion of degenerate or criminal children from the common schools and to keep records of the progress and development of the school children of the State.

The local boards should consist of business men and physicians, should keep records, and should confer with the national and State boards from time to time. It was proposed that in each school every child should submit to a complete physical examination, even including blood and other microscopical examinations and psychological records. The use of the Bertillon system was recommended. The records thus obtained were to be available to the State and national boards for study and reference. There was to be a county medical superintendent for the country districts, and the superintendent in each city school was to be a physician. The functions of the board were to include the distribution of literature bearing on school and general hygiene and advice to the parents of each child, based on its examination.

Dr. A. W. Fairbanks, of Boston, in the discussion, pointed out the weakness of the present system, which gives no preventive power to the Medical Inspector, and allows of little time except for the identification of already developed diseases. The same speaker characterized Dr. Smith's scheme as Utopian under present conditions, on account of the expense required, as a great increase in physicians would be demanded. The desirability of an extension of the present system was conceded by all who discussed the paper.

Rules for the Care of Young Infants in Public Institutions.—Dr. H. H. McClanahan, of Omaha, Neb., in his paper gave in a concise way his experience of over four years with an institution for the care of infants. The main points which were emphasized were the necessity for trained nurses in such institutions and a greater control over the nursing staff by the visiting physician. On the side of the infants a large amount of cubic air space, a good milk supply, and careful disinfection of napkins was insisted on. Regarding the latter matter the opinion was expressed, both in the paper and in the discussion, that careful hand disinfection after changing infants, and immediate disinfection of napkins, was of great importance in preventing the spread of diarrheal diseases. The isolation of infants who showed any signs of sickness was also insisted upon. Dr. Fairbanks, of Boston, in the discussion, suggested that the exclusion of flies from sick children was also a factor in preventing the spread of infection.

SECOND DAY—JULY 12TH.

Amaurotic Family Idiocy.—Dr. A. C. Cotton, of Chicago, said: This condition is often overlooked by pediatrists, as the eye conditions often predominate, though, on the other hand, the examination of the fundus is necessary for diagnosis. The name Amaurotic Family Idiocy was suggested by Sachs, who gave the first satisfactory description of the disease. The disease is a fatal one, as a rule, beginning in the first few months of infancy in children born without any apparent abnormality. Death usually occurs within the first two years, though it may be deferred. Syphilis and consanguinity do not seem to be etiological factors. The racial factor is a strong one, all of the 54 cases reported, except six, having occurred in Hebrews. Often more than one child in the family is attacked, though others may escape. In a typical case the child first manifests symptoms at about the third month, there is muscular enfeeblement and gradual loss of sight. The ocular changes are very characteristic and consist of a nebulous whitish zone about the macula. As the case progresses the strength is gradually lost, there is some emaciation, hyperacuity of hearing, and mental symptoms in the form of general lack of mental development, and attacks of explosive laughter. The child presents great hypersensitiveness, and convulsions may be caused by very slight peripheral insults, such as blowing on the face. If repeated the insults have a lessened effect, but marked reactions follows on short periods of rest. Nystagmus is quite frequently seen. The reflexes may be either increased or decreased. The cases finally show a general spastic or flaccid paralysis. Deglutition is quite frequently affected. The condition may be confused with rachitic pseudoparalysis or with spastic paraplegia, associated with congenital blindness. Dr. Cotton's paper was based on three cases personally observed and an extensive review of the literature. It was brought out in the discussion by Dr. Cotton that nearly all the cases are breast fed, and he showed that in one mother having both normal and idiotic children, the milk was normal during lactation while the healthy children were nursed, but deficient in fat while amaurotic children were nursed. Dr. Cotton was able to prolong the course of one case by adding fats to the diet. He suggested that the poverty of fat indirectly influenced the production of lecithin, which is so important in the development of the nervous system.

Ataxia of Central Origin Appearing in Childhood.—Dr. A. W. Fairbanks, of Boston, in this paper discussed the so-called heriditary cerebellar ataxia, a race condition simulating in many ways Friedreich's

ataxia. The clinical picture begins in childhood with an incoordination affecting first the legs and later involving the arms and perhaps the ocular muscles. The progress is slow. Speech may be affected and is of a peculiar character, not scanning, but suggesting that the individual thinks out each word carefully before pronouncing it. Explosive speech is at times observed. Nystagmus is usually present, and choreiform or pseudo-athetoid movements are frequently seen. The choreiform movements may be associated with movements elsewhere in the body. Lateral curvature develops rather late in the disease, and is associated with paralysis, muscle spasm and contractures. The mentality is unaffected in some cases, though others show degeneration of the mental powers and epileptiform seizures. Less common symptoms are vertigo, headache, a vacant expression, optic atrophy, ocular pareses, and attacks of unprovoked laughter. In general the disease resembles Friedreich's ataxia, but there are points of difference. The general symptoms of the disease appear later, and when they occur may mask the earlier ones. The question of tendon reflexes, which has led to great discussion, depends on the duration and extent of the disease. Taken alone they are of no value. The anatomical lesions consist in an atrophy of the noble elements in the cord and cerebellum, and an increase of the glia in the affected areas. The regions most affected in the cord are the columns of Goll and Burdoch, Clarke's column, and the pyramidal tracts, especially the crossed pyramidal tracts. The direct cerebellar tracts are also involved, probably secondarily, as the result of the changes in Clarke's column. It is to be noted that the cord columns most affected are those last developed, and it is suggested that the process supervenes on a hereditary developmental insufficiency of the affected areas.

The Prevention of Summer Diarrhea.—Dr. Maurice Ostheimer, of Philadelphia, explains the prevalence of diarrhea in summer by the action of the heat, which reduces infantile resistance and promotes the multiplication of bacteria in milk. After outlining the general care of the infant during this period, the necessity of open air, cool clothes, cleanliness, properly cared for milk and proper intervals of feeding, the author gave in detail the contents of a leaflet to be distributed to mothers and physicians. He suggested instruction in the schools, especially the high schools, of matters relating to infant hygiene, and also proposed that the milk commissioners, now present in several cities, should be increased in number. He voiced the idea that a model dairy, under the city government, and a milk modifying plant which would sell to the poor at cost should be established in every city. He condemned wholesale Pasteurizing, as the number of bacteria in milk actually increase under this treatment; he pointed out that home Pasteurizing did not have this effect. The remainder of his paper, dealing with the details to be brought out by his educational pamphlet, does not lend itself to abstracting, but should serve as a model for those interested in promulgating such methods.

A Study of Fifteen Cases of Diarrhea in Children.—Dr. John C. Cook, of Chicago. The material studied by Dr. Cook consisted of the diarrhea cases observed at the Jackson Park Sanitarium, Chicago, during the summer of 1904. Of the fifteen cases, eleven were mild and four fatal. The symptomatology was the usual one, fever ranging from 99 to 105 degrees Fahr., vomiting and diarrhea. The fatal cases showed mixed infections, as would be expected; and the pneumococcus was mainly involved. In the discussion Dr. Michael, of Chicago, stated that of 119 cases recently studied in that city, 80 cases showed the Flexner-Harris type of *Bacillus dysenteriæ*. Clinically the cases could be divided into those with predominantly toxic symptoms and those with local symptoms of ileocolitis and mucus and blood in the stools. The *Bacillus dysenteriæ* was isolated from both classes of cases, especially the ileocolitis, but some cases of ileocolitis did not show *Bacillus dysenteriæ*. Dr. Cook, in the discussion, called attention to the fact that both vomiting and the passage of feces were especially apt to occur when the fever was at its height.

Typhoid Fever in Children.—Dr. William J. Butler, of Chicago, read his paper in abstract, on account of its length. After reviewing the historical aspects of typhoid fever in children, the author summarized the results of his study of 210 cases. The usual description of the disease in children was given, and several points were emphasized. The writer's cases seemed to show a relation between vomiting and hemorrhage, especially in cases in which vomiting existed from the first was hemorrhage apt to occur. The appearance of the stools in very young children was not so characteristic as in adults, though in older children pea soup stools often occurred. A preliminary constipation was shown to have no evil significance, as has sometimes been claimed. Rose spots occurred in 54 per cent. of all cases, and herpes in three cases, though two of these had complications. The average duration of the fever was 17 1-3 days, a much shorter period than is usual in the adult. The usual parallelism between the pulse and the temperature was not present in very young children. The characteristic leucopenia was present and the Widal occurred in nearly all cases where it was tried sufficiently after. Relapses were more frequent than in adults, especially in girls. The mortality in his cases was 5.2 per cent., and was twice as frequent in relapses as in original attacks.

Pneumonia in the Young.—Dr. Edward F. Wells, of Chicago, based his paper on an analysis of 30,025 cases and 225,642 deaths, collected from his own services and the literature. The paper was partly statistical, and this portion did not lend itself to abstract. It was shown that pneumonia occurs most frequently in early childhood, less frequently from ten to thirty, and oftener from thirty to fifty-six. The mortality of the disease, however, is only moderate in early childhood, reaches its lowest level between the ages of ten to twenty years, gradually advances between twenty and fifty years, and then rapidly rises. Children may have the disease at any age, though the new born are least liable. Newly born children have no pneumococci in the throat, and do not contract pneumonia until after they acquire them. The usual clinical picture of pneumonia in children was painted, and stress laid on the difficulty of detecting the physical signs. A good deal of stress was laid on the percussion dullness, the diminished breathing and the crepitant râles. Friction was said to be infrequent, and the unusual location of the early dulness emphasized. Dr. Wells believed that the mortality is much lower than is usually stated. The treatment of the disease he considers an art. There is no specific. The treatment he recommended was common sense,

fresh air or oxygen if necessary, the avoidance of exhaustion, tepid sponge baths, followed by alcohol rubs, the free administration of water, and good nursing. Medicinally a reliable tincture of digitalis was recommended early in the disease, with caffeine or adrenalin as indicated. In the discussion which followed Dr. Cotton, of Chicago, advocated the introduction of normal salt solutions by hypodermoclysis, enteroclysis or intravenous injection. Dr. Wells opposed any but very careful use of this method, on account of the absence of reliable data concerning the action of chloride of sodium and the danger of an excess of fluid throwing too much work on the right heart. Dr. Morse emphasized the difference between the infant and the child in pneumonia, the disease being frequently fatal in the former and usually mild in the latter. He also spoke of the frequency of abdominal pain, the importance of fresh air, and emphasized Dr. Wells' caution as to the use of salt solution.

Pleural Effusions in Children.—Dr. C. F. Wahrer, of Fort Madison, Ia., read a practical, commonsense paper, emphasizing certain points in connection with pleural effusions. He commented on the fact that it was frequently overlooked, generally on account of insufficient examination. Often is it wrongly diagnosed pneumonia; nine-tenths of all cases of pleural effusion in children are due to pneumonia. The effusion is usually prevalent in children under three, and such cases, tne untreated cases, usually die, and the properly treated usually recover. Dr. Wahrer emphasized the necessity for early diagnosis and early surgical intervention. Aspiration is often sufficient to effect a cure in serious cases, but in purulent effusions evacuation by the knife is necessary. This can be done in ordinary cases by any general practitioner.

The After-Effects of Diphtheria on the Heart.—This was the paper of Dr. Franklin H. White, of Boston, Mass., and was read by the Secretary, Dr. Snyder. Dr. White stated that while the effects of diphtheria on the heart and its nerves during the disease was well known, the after-effects on this organ were less well known. While moderate disturbances were common, severe ones were relatively uncommon. The cases studied to form the basis of the paper consisted of 78 individuals who had been treated during the attack at the Infectious Department of the Boston City Hospital. The cases were followed for from five months to a year after they left the hospital. Excluding babies, one-third of the cases which left the hospital had at their exit rapidity of the heart's action (100 to 120), one-third had irregularity of the heart, and a considerable number had heart murmurs. Only those in which the heart was known to be unaffected previous to the disease were considered. It was found that 90 per cent. of diphtheria cases have some cardiac trouble. The most common lesions are irregularity, rapidity, hypertrophy or valve insufficiency. Most of these cases gradually recover; the recovery occupying on an average four months' time. Some clear up after six months or even after a year. A fair number prove to be permanent. As a rule those patients who have had the severest attacks of pneumonia recover most slowly. The cardiac signs generally develop in the first or second week of the disease. Mild cases require a week's rest in hospital after the attack. More severe ones two weeks and the severest three weeks. In general the cases show no marked signs of heart disease, often only some palpitation and dyspnea after exercise. Often murmurs develop after discharge from overdoing by the patient. The murmur commonly heard is a mitral systolic, often transmitted to the axilla, associated in many cases with an accentuated pulmonic sound and hypertrophy of the heart. The author regarded some of these cases as purely functional, some as instances of relative mitral insufficiency from dilatation, and a few as true endocarditis. Some cases show pallor, weakness, rapid pulse and palpitation. Many of the cases clear up rapidly but seven per cent. still showed signs after many months. The author lays stress on the treatment of rest in bed, the length of time depending on the character of the case, tonics and the avoidance, after the patient is up, of overexertion. Even mild cases should be carefully watched. In the discussion it was generally conceded that since the antitoxin treatment of diphtheria heart complications are more common, but it was emphasized that this was not due to the antitoxin.

Dr. Fairbanks, of Boston, suggested that this fact was due to the recovery under antitoxin of many severe cases, which would have died before antitoxin days. He also emphasized the value of Schott methods in these cases.

The Management of Children with Typhoid Fever.—Dr. W. C. Hollopeter, of Philadelphia, said that a subtitle might be "A Plea for Enteroclysis." He pointed out that early diagnosis of this disease in children was difficult on account of its atypical character. It might be confounded with enteritis, pneumonia, meningitis, or auto-intoxication. The diagnosis could seldom be made before the end of the first week and the Widal and diazo tests are of little value before this time. There is no specific treatment. The indications are to reduce the toxemia and control the temperature. The patient should be in a large room with plenty of fresh air, there should be a preliminary dose of calomel and the colon should be irrigated daily. The enteroclysis both removes toxins and lowers temperature. A tepid sponge bath should be given night and morning, and the hygiene of the nose and mouth is important. The diet suggested was peptonized milk alternating with albumin water. The peptonized milk is rendered more palatable by adding carbonated water. Orange and lemon juice should be given. Water to be given freely was also advocated. Recumbency and liquid diet are necessary for ten days after convalescence. The ice cap to the head and hot water bottle to the feet were recommended in hemorrhage and cold or ice enemata.

Report of a Case of Imperforate Rectum, with Absence of Anus.—Paper read by Dr. Edward H. Small, of Pittsburg, Pa. The case reported by him was a fifth child, born in the R.O.A. position and besides the absence of anus, had a phimosis, and webbing of the second and third toes on each foot. There was also a sacral dimple. The site of the anus was punctured with a trocar one-fifth inch in diameter and this was introduced along the normal course of the rectum until a sudden lack of resistance showed entrance into the bowel. This was two inches from the perineum. Meconium flowed and the bowel was washed out. Digital dilatation revealed the rectum which was firmly attached laterally. Subsequently the case was treated by daily bowel washing, digital dilatation for eleven days and later catheter dilatation. This treatment was continued for two months, at the end of which time the rectum had descended nearly to the anus and there was a good sphincter higher up than normal. The author expresses pleasure at his success in this case but would in future employ the open method as the use of the trocar is dangerous. The peritoneum may be punctured and fatal peritonitis result.